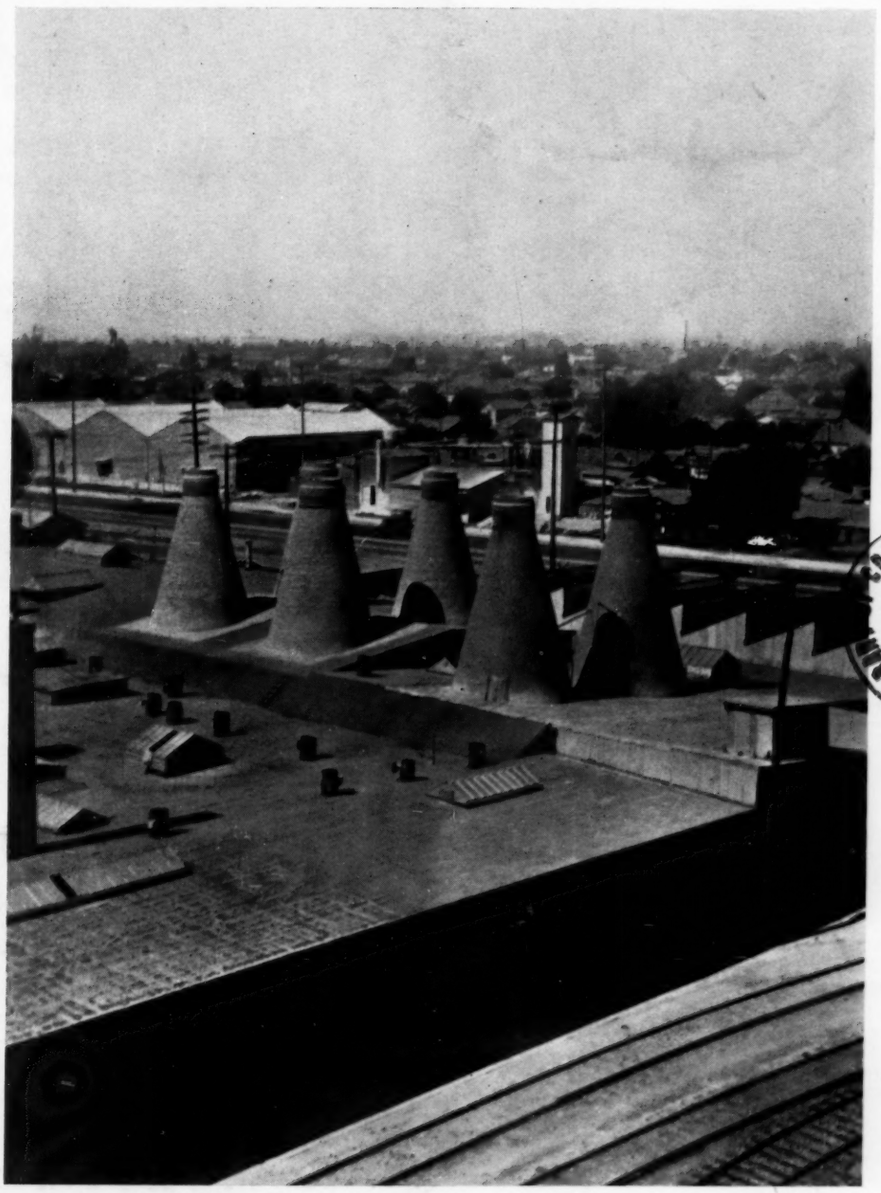
WESTERN GAS

June
1927

20 Cents
the Copy



Up-draft gas-fired kilns are shown in this bird's-eye view of the American Encaustic Tiling Company's Los Angeles plant. Art tile and vitrous ware are made here.

A MONTHLY JOURNAL DEVOTED TO THE WESTERN GAS & APPLIANCE INDUSTRIES

WESTERN GAS

626 S. Spring Street,
Phone TUcker 8982
Los Angeles, Calif.

447 Sutter Street
Phone GArfield 5383
San Francisco, Calif.

Official Publication Of The
Pacific Coast Gas Association

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GEORGE H. FINLEY, *Managing Editor*
H. ELLIOTT TAYLOR, *Associate Editor*
JAMES E. JENKINS, *Associate Editor*
CRAIG ESPY, *Advertising Manager*

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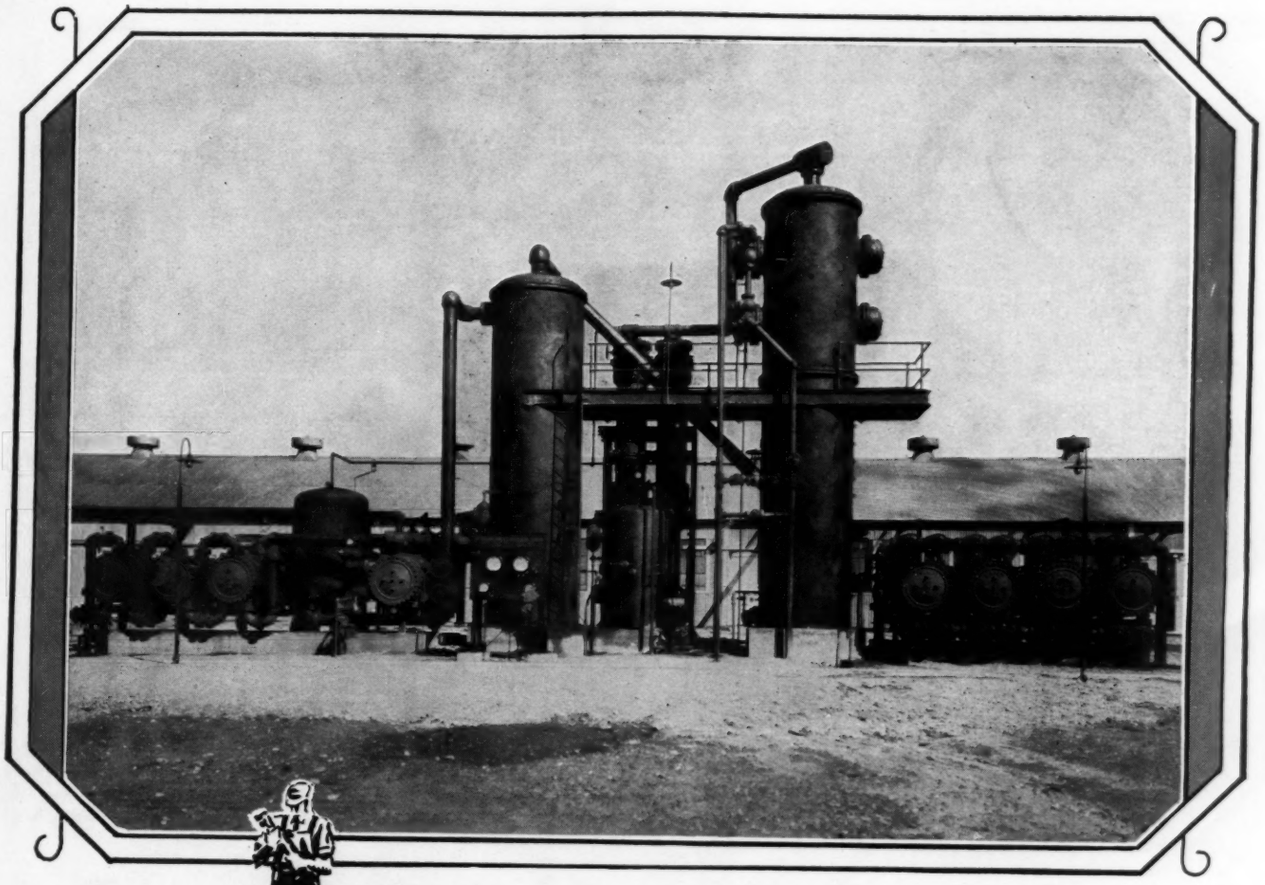


Portable, Mobile, and Fabricated plants with a range of gasoline capacities up to 40,000 gal./24 hr. *Lower cost per gallon* of gasoline produced ★

BRAUN

Absorption Plants

C·F·BRAUN & CO

Manufacturing Mechanical Engineers

·ALHAMBRA·CALIF·

TULSA · NEW YORK · DALLAS

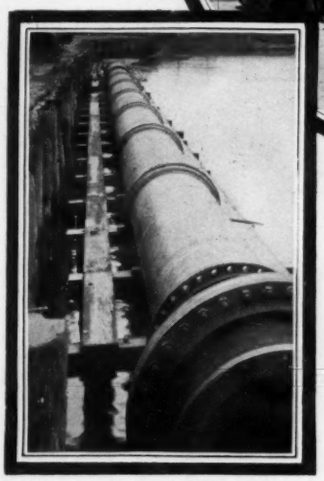
BRAUN

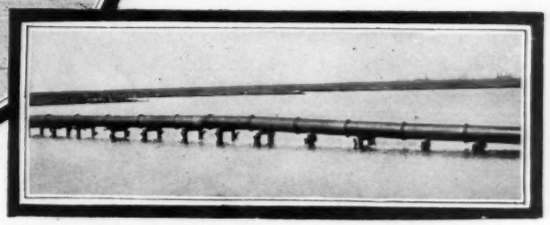
Our constant and efficient service is just what you would expect to find backing up America's most popular tire.

Truck Tire Service Co.

MEtropolitan 6391

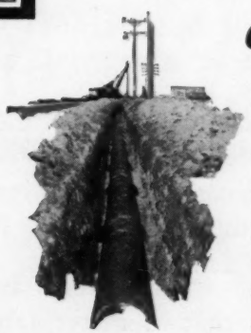
A Goodyear tire for every need





Atlantic City uses Cast Iron Pipe

in its water and gas supply lines and sewage disposal system



THESE illustrations demonstrate how well Cast Iron Pipe solves the problem of unusual installations.

The different lines run under sand, over salt marshes, on pontoons and across bridges.

Our engineering department will be glad to co-operate with you in the solution of any installation problem.

Write for U. S. Cast Iron Pipe handbook, which contains all necessary data on specifications.

UNITED STATES CAST IRON PIPE & FOUNDRY CO.

Makers of

deLavaud

Centrifugal Cast Iron Pipe

PATENTED

United States Cast Iron Pipe *and* Foundry Company

General Offices:

Burlington, New Jersey

SALES OFFICES

Philadelphia: 1421 Chestnut St.
Chicago: 122 So. Michigan Blvd.
Birmingham: 1st Ave. & 20th St.
Buffalo: 957 East Ferry Street
Cleveland: 1150 East 26th Street
New York: 71 Broadway
San Francisco: 3rd & Market Sts.
Pittsburgh: 6th & Smithfield Sts.
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.
Minneapolis: 6th St. & Hennepin Ave.

Meter Manufacturing— a Specialized Business

OUR standard dry meter is modeled after the original Glover type. On such scientific lines was this meter designed that, despite some improvements and modifications since, it has not been expedient to change the principle on which this meter was constructed.

A "Pacific" product must possess above all three qualities—*dependability, accuracy and economic cheapness.*

Dependability is placed first from the fact that accuracy must stand or fall with the dependability of the apparatus. Economic cheapness is necessary from the viewpoint of the gas company, as in its eyes the meter produces nothing, earns nothing, though playing a most important and necessary part in its position as cash register.

A highly specialized business indeed is that of meter fabrication. The manufacture of meters, like that of clocks, is a specialty trade—*and the meter can be made only by specialists and experts.*

Pacfic Meter Works

of the
American Meter Company, Inc.
Northwestern Representative

SAN FRANCISCO
495 Eleventh St.

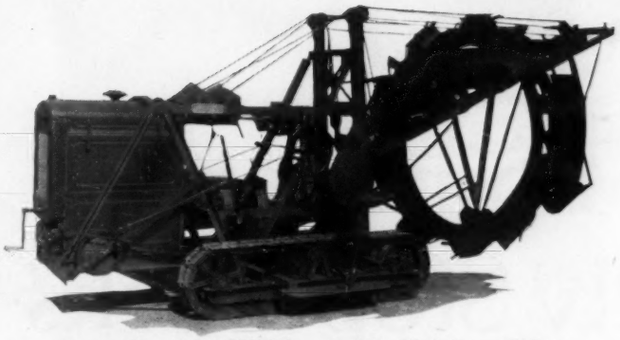
PORTLAND
Northwestern Gas and Electric Equipment Co.

LOS ANGELES
2118 Atlantic St.

THE BABY DIGGER

REGISTERED

Real Trenching Efficiency



Length—18′, Width—4′9″, Height—8′2″

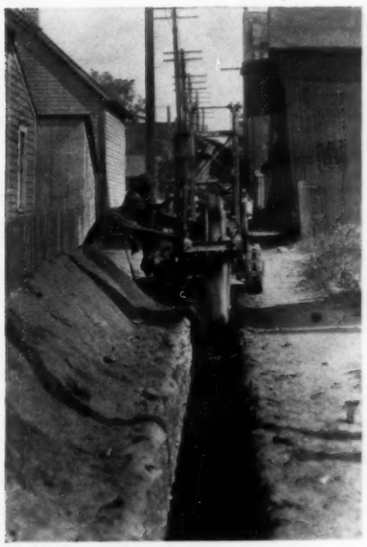
The Baby Digger serves the gas industry where a light machine operating in close quarters is essential.

Correct Design plus the best of materials is responsible for the low operating costs shown by Gas Company users.

The Baby Digger's Small Size and It's Weight of ONLY 4 TONS leave nothing to be Desired in the way of Flexibility and Mobility.

Our many repeat orders are concrete evidence of its ability to stand the gaff.

May we have the opportunity of furnishing further information?



Down a Narrow Alley

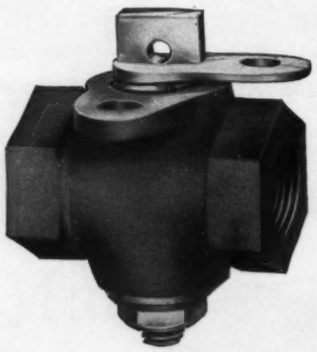
THE CLEVELAND TRENCHER COMPANY

"PIONEERS OF THE SMALL TRENCHER"

20100 ST. CLAIR AVE. **CLEVELAND, OHIO, U. S. A.**

THE BABY DIGGER

REGISTERED



5-Good Points of L-S Iron Body Stop Cocks

1—HEAVY IRON BODY
2—RED BRASS KEY
3—KEY GROUND INTO BODY
4—BOTH SIDES OF WASHER FACED
5—TESTED BY HEAVY AIR PRESSURE UNDER WATER

Furnished in Lockwing or Flathead, Recess or Galvanized. Sizes from ¾x½ to 2 in.

THE LATTIMER-STEVENS COMPANY

72 Yale Ave., Columbus, Ohio

New England Representative
The Eastern Service Co.
Boston, Mass.

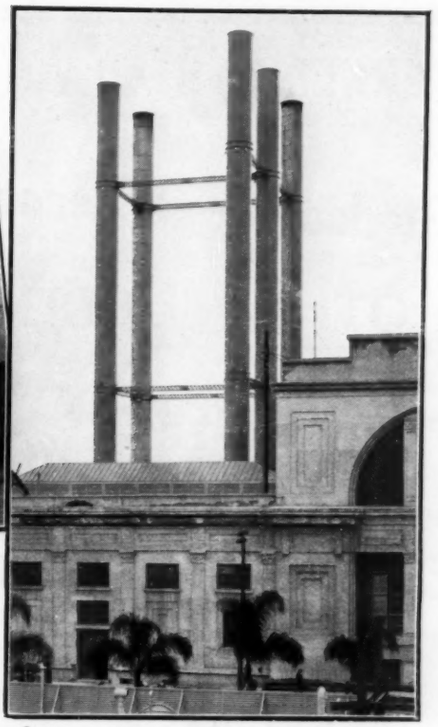
Chicago Representative
The Utilities Service Co.
122 S. Michigan Ave.

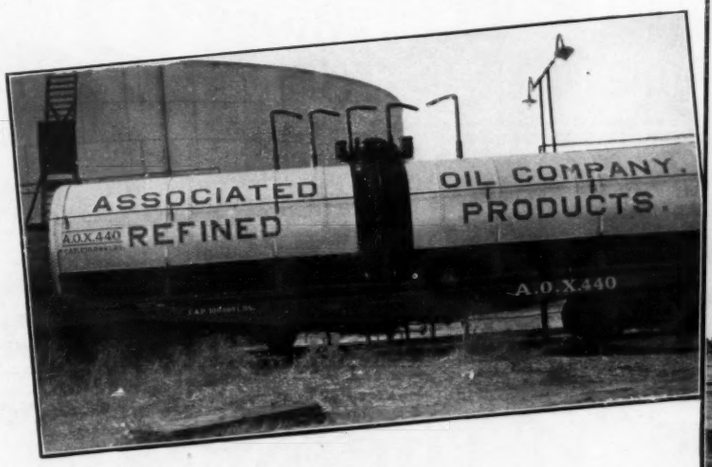
San Francisco Representative
A. P. Bartley
67 Second St.

LattimerStevens
METER CONNECTIONS-SHELVES
STOP COCKS ~ ~ ~ AND SEALS

Right: Smoke stack painted with Bitulumin, San Diego Cons. G&E Co.

Lower: Associated Oil Co. Tank Car.





ALUMINUM PAINTS *deflect* HARMFUL SUNRAYS

Bitulumin's sunray deflection 86% Keeps tanks and contents cooler minimizing evaporation

The rapidly increasing use of Aluminum Paints in general and Bitulumin in particular for protecting a variety of exposed metal surfaces is due to their unusual protective qualities.

Bitulumin successfully resists paint's two worst enemies, sunlight and moisture. It is largely immune to Ultra Violet rays which break down paint surface, allowing moisture to penetrate.

Bitulumin turns away approximately 88% of harmful sunrays thus keeping tanks and contents cooler and minimizing veaporation.

Bitulumin forms a light resisting durable and moisture proof surface. It will outlast the best lead and zinc paints by two to one.

Bitulumin while widely used for painting oil storage is equally efficient on tank cars, metal buildings, refinery equipment, still towers, water tanks, brindges, etc.

Bitulumin, put up in double containers to insure fresh mixing, is manufactured by Hill, Hubbell & Company, manufacturers of a special line of paints for the oil industry.

HILL, HUBBELL & COMPANY

Manufacturers of
Highest Grade Oil Industry Paints and Pipe Line Coatings
Factory at SAN FRANCISCO and TULSA

District Offices:

331 W. Eleventh St.
LOS ANGELES

2412 First Ave S.
SEATTLE

1006 Washington Ave.
HOUSTON

51 First St.
PORTLAND

15 Moore St.
NEW YORK CITY

600 E. Lombard Street
BALTIMORE

Selling an acceptance for gas appliances

In its 1927 program, this Company will advertise in 54 daily newspapers and 88 weekly newspapers of general circulation throughout the territory served—a combined circulation equal to and greater than the population of the territory served.

Gas advertisements occupying over 65,704 column inches of space will appear in these publications at regular intervals.

These advertisements will sell an acceptance for Gas Appliances.

The Policy: To create a demand for greated Gas Service will continue to react to the mutual benefit of manufacturers, jobbers, dealers, and the consumers.

This company is glad to be of assistance in creating additional business for the industry and a greater service for its customers.

PACIFIC GAS AND ELECTRIC COMPANY
P·G·and E·
Owned·Operated·Managed
by Californians

IF IT'S DONE WITH HEAT, YOU CAN DO IT BETTER WITH GAS

New Efficiency in operation!

Model -10- The New Reynolds Gas Regulator--

For High Pressure Service

Improved design, workmanship to a higher standard of precision, a still finer grade of materials.

Model 10 will require less repairs, fewer adjustments, less frequent cleaning than any high pressure regulator hitherto devised.

And—by reasons of a greatly increased accessibility of all working parts—whatever adjustments may be necessary are now quicker, easier, less costly to the gas company, more satisfactory to the customer.

This is the newest achievement of the oldest exclusive manufacturer in the field. The final embodiment of thirty-five years of world-wide experience.

It is available for all distribution systems, where the customer's service is taken directly from the high pressure line—up to 100 lbs., and will reduce outlet pressure to 2½ in. to 12 in. (water column).

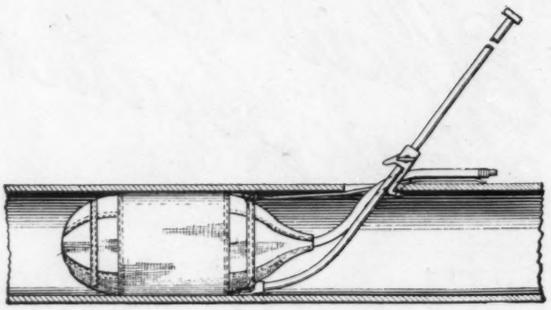
Write for Complete Descriptive Folder

Reynolds
Gas Control Since 1892

Reynolds Gas Regulator Company

Anderson, Indiana, U. S. A.

Introducing



Patents Pending

The Goodman Cylindrical Stopper

High Pressure

An inflatable bag with a fine, strong rubberized casing for use in gas, oil, water and drain pipes. So designed and made that it may be inflated to a high pressure, anchored in place so that it will not creep in the pipe or become displaced, and forming a perfect seal against either gas or liquid. Easily inserted and withdrawn. Only a small tap hole needed.

Sent On Trial

Safety Gas Main Stopper Co.

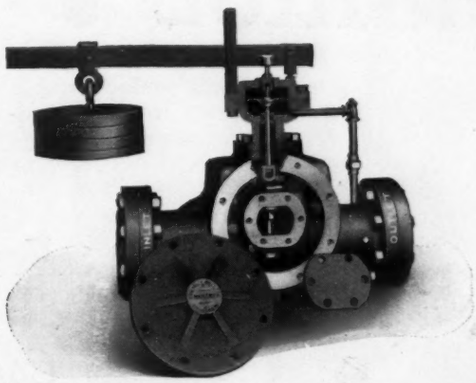
523 Atlantic Avenue *Brooklyn, N. Y.*

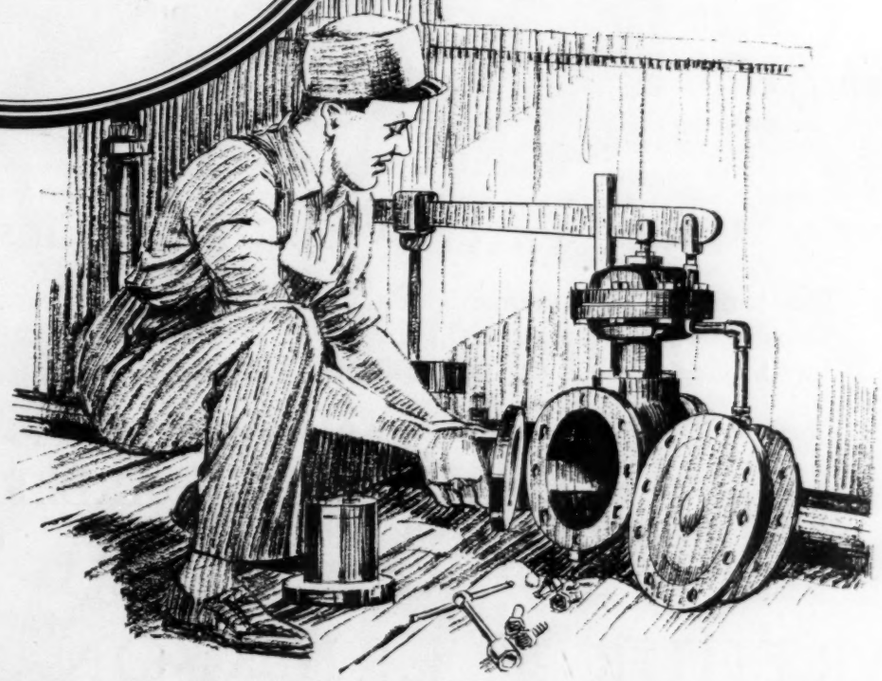
Cable Addrress—Gastopper, N. Y.

Pacific Coast Representative—C. B. Babcock Co., 135 Bluxome St., San Francisco, Calif.

EMCO

BALANCED VALVE REGULATORS





Once an EMCO Regulator is installed in the line it is there for good. The REMOVABLE Valve Box of the EMCO High Pressure Regulator makes it unnecessary to tear the Regulator out of the line to make repairs, and the Valve Box size can be changed to take care of increased or decreased consumption.

A spare Valve mechanism on hand assures uninterrupted service, saves time, money and labor.

PITTSBURGH EQUITABLE METER CO.

PITTSBURGH, PENNA.

J. H. Hill, District Manager **Union Bank Bldg.** **Los Angeles, Cal.**

What Is

THE Erickson UNITROL ?

Automatic
in operation

Inexpensive
in first cost

Attractive
in appearance

Substantial
in construction

Healthful
to use

Economical
with fuel

Convenient
step saver

Universal
in application

Ideal for every gas heating installation

The complete outfit consists of the Erickson Gasotrol (control valve), the Erickson Telostat (room thermostat), Erickson Transformer, wire and necessary staples. Any mechanic following simple instructions in the package can install in a short time.

WE ARE PACIFIC COAST DISTRIBUTORS FOR

The "MINNEAPOLIS" HEAT REGULATOR

BARBER Patented JET GAS BURNERS

For further information communicate with

ARTHUR F. ERICKSON COMPANY

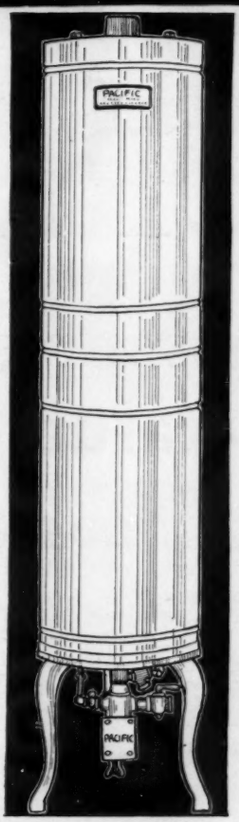
315-319 Selling Building, Portland, Oregon
or nearest Coast Branch Office

GEORGE FINNEY
826 L A G & E Building
Los Angeles
TUcker 4577

LLOYD LANEY
Terminal Sales Building,
Seattle
ELiot 8508

HARROLD GNARINI
665 Sixth Street
San Francisco
Sutter 60

More Profit for you in GUARANTEED Pacific Hot Water Heaters!



WHEN the largest manufacturer of gas heating appliances in the West decided to add a complete line of hot water heaters — an investigation was conducted among the trade to determine which merchandising plan was the most desirable.

Dealers told us that the public asked for "cheap" water heaters, and inexpensive heaters were easier to sell — BUT there was no profit in them for the dealer. Sales and overhead expense are the same whether a dealer sells a cheap heater or a good one. And the inevitable demands for service on cheap, inefficient heaters ate up the small profit quickly.

So the smart business men in the heater business are not selling cheap heaters. They carry a few and advertise them as leaders—but they SELL quality hot water heaters which carry a substantial profit and are so well built that profit-eating service calls are eliminated.

To such dealers the Pacific line of Automatic and Instantaneous hot water heaters appeals strongly because—extra-fine quality in material and construction insure dependable operation and long life. Pacific Heaters are sold as a quality product—and each sale means a worth-while profit, plus freedom from profit-eating service calls. Each heater is guaranteed against defects for one year—and back of that guarantee is the reputation of the biggest organization of gas heating specialists in the West.

If you are interested in a money-making agency—either for the hot water heaters alone or for the complete line of Pacific Gas Heating Appliances also — write for dealer proposition.

Pacific Gas Radiator

Gas Heating Company Headquarters

Roseberry and Walter Streets, Huntington Park, California

Los Angeles Agency
Pacific Gas Heating Company
1732-40 W. Washington St.
BEacon 2190

Gas-Steam Radiators

Unit Basement Furnace Systems

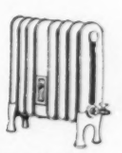
Dual Pipeless Furnaces

Fireplace Radiant Heaters

Recess Radiant Wall Heaters

Automatic Storage Hot Water Heaters

Pipeless Floor Furnaces


Gas Radiators—Pressed Metal and Cast Iron

Agencies Throughout the West

Call for a Pacific Heating Engineer

DISPLAY AT METROPOLITAN BUILDING MATERIAL EXHIBIT

MANUFACTURERS of EVERY TYPE of GAS HEATING APPLIANCE
All Vented for Healthful Heat

Write for prices and complete information on this TEEPLE *Thermostat*

The TEEPLE

is the original simple, low priced, room temperature thermostat

Over 10,000 TEEPLE room temperature thermostats are in use on the Pacific Coast. Simple in design, they combine accuracy and permanent reliability

The large number of installations made during the past few years is the best proof of the widespread demand for the TEEPLE thermostat, and its popularity with home and building owners.

Quantity production has brought the price of TEEPLE controls down to a point where sales are largely a matter of suggestion.

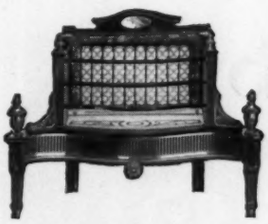
We also manufacture magnetic gas valves and complete equipment for the automatic control of gas, steam, hot water, air, oil, or electric heating systems or for refrigeration control.

Write us concerning your temperature control problems—we design and manufacture special equipment.

L. R. TEEPLE COMPANY [*formerly* TEPCO Mfg. Co.]
540 East 9th Street , , , , Portland, Oregon

TEEPLE TEMPERATURE *Controls*

Pacific Coast Distributors for Honeywell Heating Specialties Co



All-Year Sales

The Humphrey Radiantfire is one gas appliance that can be sold the year 'round. The experience of Radiantfire dealers has made this a fact—not mere theory. We are more than glad to cooperate to make all-year sales for you. Write us for details.

The HUMPHREY Radiantfire

TESTING LABORATORY AGA APPROVED

TRADE MARK REG. U S PAT OFF

Manufactured by
General Gas Light Co.
Kalamazoo, Mich.

Pacific Coast Manager
C. B. Babcock
135 Bluxome St.,
San Francisco

The Tappan is the only gas range sold on the Coast that has an *insulated oven.* This is unquestionably the greatest advance in gas ranges—a wonderful selling feature, exclusively Tappan. Profit by it!

For franchise information write now to

TAPPAN STOVE COMPANY

Pacific Coast Office

665 Howard Street—San Francisco

H. R. BASFORD COMPANY
Direct Factory Representatives
Northern California—Nevada—Hawaii
665 Howard St.—San Francisco

H. R. MAYER
Direct Factory Representative
Southern California—Arizona
1001 East First St.—Los Angeles

JEWEL STOVES AND FURNACES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

JEWETT

MAGEE

Monarch MALLEABLE

YORK ABENDROTH

ERIEZ

SUMMIT STOVES RANGES FURNACES

PEERLESS

TAPPAN

SPARK

RED CROSS RANGES & FURNACES

Crawford Gas Ranges

ANDES

Paramount MALLEABLE

THERE are 3 outstanding features in the Wilcolator Oven Heat Control that recommend it strongly to the retailer in gas ranges and commercial representatives of gas utility corporations. These are:

1. Wilcolator equipped ranges give more value per dollar of price.
2. Wilcolator equipped ranges increase the consumption of gas through greater use.
3. Wilcolator equipped ranges will stimulate replacement business.

Send requests for more specific data to Dept. 4 at the address below. No obligation is involved.

THE WILCOLATOR COMPANY

17-23 Nevada Street **Newark, N. J.**

WILCOLATOR

OVEN HEAT CONTROL

1
Smooth, closed top makes handling of vessels easy — no lifting or carrying. Convenient working height. Plenty of light.

2
Big range of cooking heats — from quick boiling with lids off to the most gentle simmering —gives the correct cooking temperature for every food, and therefore more delicious results.

3
Separately heated broiler saves time by heating quickly. Broils evenly because burner is placed in correct position.

4
Plenty of working space—holds 6-7 vessels. Always a place to keep things hot while working with other dishes.

5
Oven requires no attention while baking or roasting. Oven Heat Regulator and Cooking Chart assure perfect results EVERY time.

6
Quickly and evenly heated oven browns evenly, no matter in what part of oven food is placed. Large capacity for emergencies.

Why shouldn't women have the kind of cooking facilities demanded by chefs?

EVER find a real good chef who would stand for open top range equipment in his kitchen? He demands the closed top range because it gives him the cooking facilities he wants. SMOOTHTOP uses the same principle.

Only by making it possible for women to get the finest cooking service from gas appliances can the position of gas be maintained, and its use steadily increased.

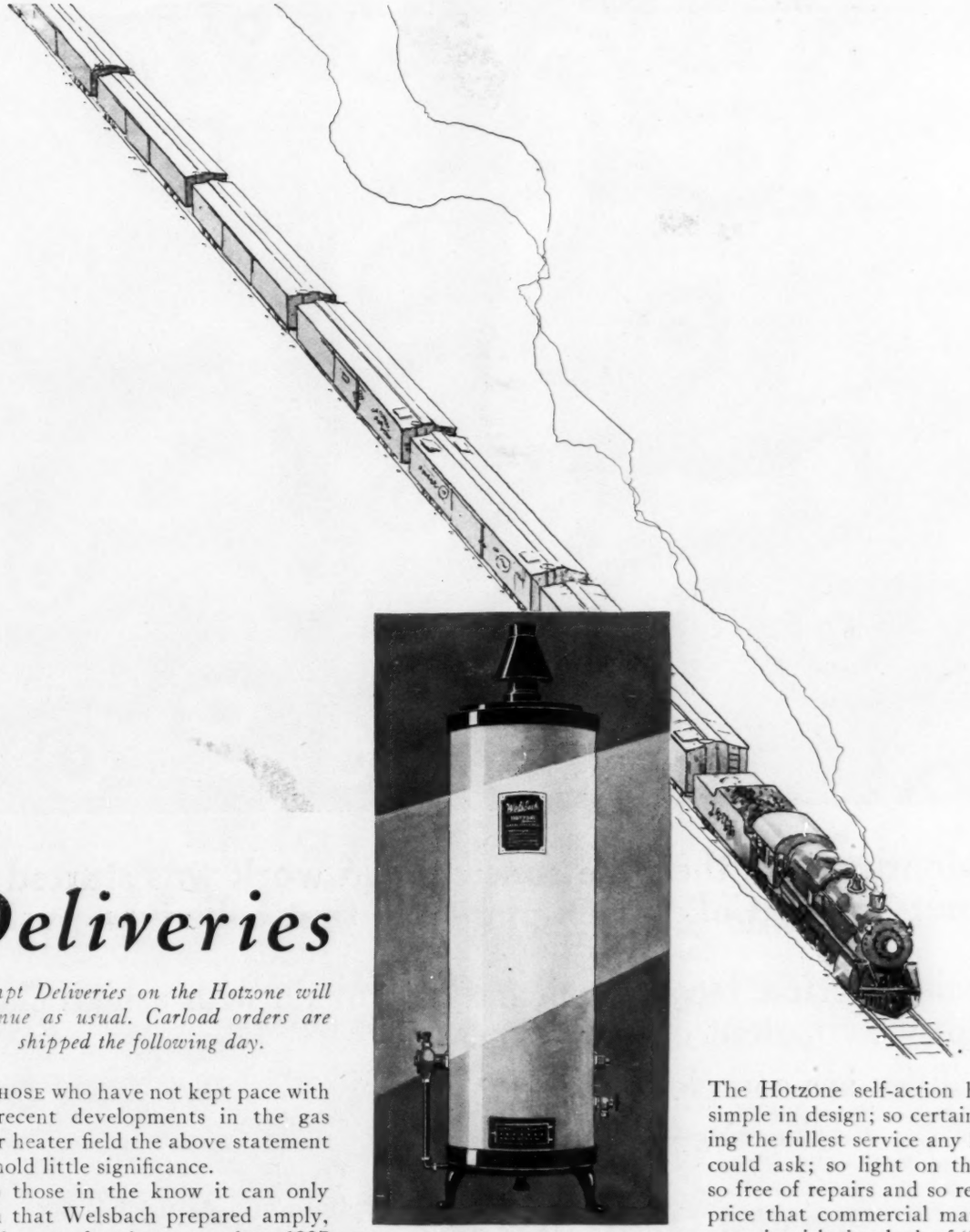
Northwest Gas & Electric Equipment Co.

Pacific Coast Distributors,
Standard Gas Equipment Corporation

372 Pittock Block,
Portland, Oregon.

180 New Montgomery St.,
San Francisco, Calif.

164 So. Central Ave.
Los Angeles, Calif.



Deliveries

Prompt Deliveries on the Hotzone will continue as usual. Carload orders are shipped the following day.

To THOSE who have not kept pace with the recent developments in the gas water heater field the above statement will hold little significance.

To those in the know it can only mean that Welsbach prepared amply, months ago, for the tremendous 1927 success of Hotzone.

For the demand for this self-action heater has broken all records. Carload orders are the rule rather than the exception. Repeats are as standard as clock work. One gas company's order for 1927 delivery totals eighty cars. And it is only an organization of Welsbach's size and background which is able to meet such success with continuous prompt deliveries instead of hanging out the S. R. O. sign.

Welsbach HOTZONE

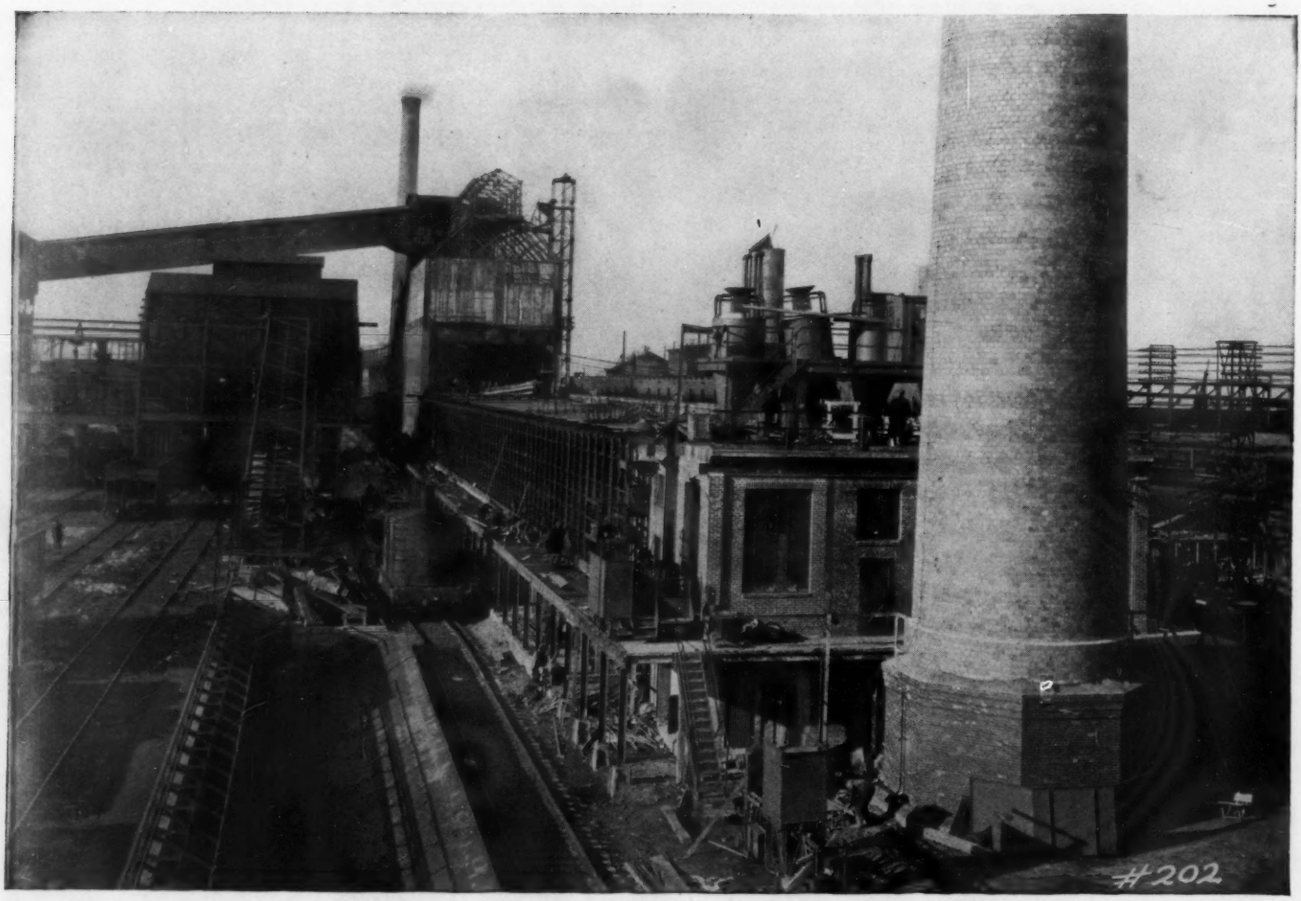
STORAGE GAS WATER HEATER

The Hotzone self-action heater is so simple in design; so certain of delivering the fullest service any householder could ask; so light on the gas bills; so free of repairs and so reasonable in price that commercial managers gaze upon it with that look of "where have you been all my life."

It is the product of the Welsbach method of getting right into the heart of a marketing condition and then announcing a product only when it meets squarely every condition of price, performance and stamina. Made in four sizes; Fifteen, Twenty, Thirty and Forty-Five gallons. For the story in greater detail write Welsbach Company, San Francisco Office, 863-865 Mission St.

Member American Gas Association
Member Pacific Coast Gas Association
Member Natural Gas Association

A word about Hotzone and its pedigree for those gas company officials who have not made its acquaintance.



Seven Months from the time construction work was started on this Semet-Solvay Coke Oven plant the first coke was pushed.

Such construction records can only be made with a high class, thoroughly competent organization.

Our facilities are complete—

Engineering—Design

Operating Experts { Coke and Gas Ovens; Ammonia Sulphate and Aqua; Light Oil; Motor Benzol }

Shops

Field Construction Organization

We are Interested in your Problems—whether large or small.

SEMET-SOLVAY
ENGINEERING CORPORATION
Division Allied Chemical and Dye Corp.
40 RECTOR ST. NEW YORK

WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in *Western America*

Public Relations

in SMALL GAS COMPANIES

By JAS. F. POLLARD

Vice-President and General Manager
Coast Valleys Gas & Electric Co.

THE problem of public relations in its essential features is much the same in small companies as it is in large ones. There are two main differences. One lies in the intensity of one cause of complaint, namely the high bill complaint, and the other in the facilities for handling complaints.

For obvious reasons which need not be discussed at length in a paper on this subject, the cost of making gas in small plants is considerably greater than in larger ones, with resultant higher rates for service. For instance, the average rate received by the small company with which I am connected is about $1.68 per thousand cubic feet of 550 B.t.u. gas, as compared with rates varying from 98c to 66c per thousand cubic feet sold by the large companies serving the nearby metropoli of California.

Frequently people who have been living in the larger cities for one reason or another move to our territory and when they get their first gas bill it is sometimes a very severe shock to them. The first symptom of the resulting attack of heart failure appears in the form of a high bill complaint. The same symptoms also appear among our old customers who have friends or relatives served by one of the larger companies, after they have been exchanging visits and incidentally have compared notes as to the cost of gas service at their respective homes. That illustrates my point about intensity of the cause of high bill complaints in the small, as compared with the large company.

As to the facilities for handling of complaints, the larger companies can and do have departments of specialists whose main business in life is to deal with public relations problems and the handling of complaints, whereas in the smaller companies where the number of employees is of necessity small, the handling of these problems must be entrusted to those who have many other responsibilities as well.

Jas. F. Pollard

FAITH in the future of a company's gas business is the first essential to good public relations, in the opinion of the author of this paper. Without this faith, adequate investment will not be made in facilities for service and adequate rates of return will not be allowed by regulatory commissions. Mr. Pollard delivered his paper before the Northwest Regional Conference of the Pacific Coast Gas Association, which was held May 6 and 7 at Spokane, Washington.

This is not an unmixed evil in the case of the small company because it means that the man who deals with the customer in a public relations way, is from actual experience very intimately acquainted with many of the operating conditions and problems of the company and can often explain away a fancied cause of complaint by reason of this familiarity with the company's problems and operating conditions that would be a "sticker" for a complaint specialist less familiar with conditions outside his own department.

On the other hand, this condition means that the management of the small company must give more thought and attention to the training of employees generally, in the public relations phase of the business, which I need not say to this meeting is of paramount importance to the success of any public utility.

"ONE BIG FAMILY"

One of the happiest things about the small company is the fact that in such an organization, it is possible for management and employees to become very well acquainted. It is just like one big family. And after all, training employees is like training children. They are quick to follow the example set before them. If the manager has the right attitude toward the public relations problem, if his decisions of such problems are invariably made first, with an eye to being more than fair to the customer, if his door is always open to every customer who has any problem to discuss whether large or small, if he is courteous and patient always, regardless of how unreasonable a complainant may be, then that same attitude toward the public relations problem will filter down through the whole organization and will become a habit with those most important public contacts, the clerk at the counter, the men on the service wagons and other employees who come in direct contact with the public.

The same principle is true in the larger organization, the only difference being that the filtering is slower, because the filter bed is thicker.

It has become an axiom among sales experts, that a man cannot successfully sell an article that he does not himself believe with all his heart is the very

best thing of its kind on the market.

I believe you will all agree that it is equally true that a gas company, whether large or small, cannot, through any kind of public relations' activity that might be devised, make the public believe that it is getting good service if it is not. In other words, the best way to handle complaints is to prevent their occurrence by looking to service facilities and by making sure that everything within the realm of possibility is done to furnish 100 per cent service. The more nearly such a result can be approximated, the more nearly will the public relations problem come to taking care of itself.

In this phase of the problem the greatest single aid will be found in the establishment of mutual confidence between the owners and the public regulatory bodies.

THE gas industry may well take a leaf out of the book of the automobile industry in this connection. From the very beginning down to the present day the prices of automobiles have been kept up to a point where there was enough profit in them to make it possible for manufacturer and dealer alike to give first class service with the result that in a few short years, the manufacturer has been able from the crude beginning of the first Ford "horseless carriage" to develop the reliable, non-skid, puncture-proof, plush-lined, silver mounted, easy-riding, powerful, dependable cars of the present day. And, I ask you, did these comparatively high prices retard the growth of the automobile industry or work an undue hardship on the public? They did not. What the public wants is service, and it is willing to pay for what it wants.

A poor, emaciated, half-starved, furtive-eyed human being, cringing from fear of a kick or a blow at every turn makes a very poor personal servant; and it is equally true that the same kind of a public utility makes a poor public servant.

If the regulatory commissions are desirous of truly serving the public, and I believe that in most cases they are very sincere in this desire, they will not attempt to do so by reducing rates to the minimum at which the public utilities can exist, but they will fix rates high enough so that capital will be induced to supply the necessary facilities to insure first class service. It has been well said that capital goes only where it is wanted and stays only where it is well treated.

On the other hand, capital and ownership must realize their obligation to the public and its agent, the regulatory commission, and looking forward with the eye of faith rather than backward with misgiving must ever build for the future adequately and progressively. When this is done, I am convinced both from observation and experience, that such a program will result in a type of service so satisfactory that the public relations problem will take care of itself, the people will rise and call the utility commissions blessed, and the owners will realize a good return on their investment.

IF I MAY be pardoned for doing so, I will use an an illustration, the experience of my own company, in this connection, because it is the "small company" with which I am most familiar.

In 1917, the California Commission had under review, all of the rates, both gas, electric and water of this company and in deciding the case, the commission had the following statement to make in regard to the gas business:

"A study of the operations of the Coast Valleys Company's gas department during the years 1915 and 1916, indicates that its net return for interest on its investment in gas properties, after deducting depreciation, has been approximately 2 per cent in the Salinas district and between 4 and 5 per cent in the Monterey and Pacific Grove district.

"As has heretofore been pointed out, the gas business will be subject to material increases in operating expenses in the immediate future on account of the general increase in the cost of labor, fuel oil and other materials, due to abnormal conditions.

"The Commission, while mindful of this fact, and giving it full consideration in considering the revision of utility rates to take care of such abnormal operating expenses as are brought about by the present national crisis, is convinced, however, that it is neither logical, equitable or necessary, that all of the burden so created should be shifted to the consumers, but a fair portion of such burden should be shared by the utilities. In the present case, however, I believe that the utility should be granted rates which are calculated to result in a net return which will be at least approximate to the cost of money."

In the same decision on the general subject of "fair return" the presiding Commissioner said: "I believe that Coast Valleys Company should, except for the limiting conditions now existing, be allowed a return of 8 per cent per annum for interest on its investment, as has been allowed by the Commission in many similar cases. After a careful consideration of all the evidence, however, it is clear that Coast Valleys Company is still in the development stage, and, in my opinion, it would be unreasonable for the Company to expect rates which under present conditions would allow a return of 8 per cent on its investment, even if it were possible to secure business under such rates."

How many times do we hear regulatory commissions resort to similar generalizations to justify their position when they do not feel it expedient for any cause to allow a company rates sufficient to give it a full fair return on the investment made in facilities to serve the public!

At the time the California Railroad Commission made the above statements the company or its predecessors had been delivering gas in the towns which it serves for approximately forty years. Let us see now how the rates fixed by the Commission in that decision worked out. At the end of 1920, three and a half years later, the Company had invested in the gas department fixed capital account $263,726 not including any allowance for working cash or materials and supplies. During the same year the net revenue from the gas business after payment of operating expenses, taxes and setting up an average allowance for depreciation, was $3,341 or a return of 1¼ per cent on the bare bones fixed capital investment without any allowance for the other items which I have just mentioned. It may be added that the previous intervening years were no better and it will be easily understood why the owners of the property, faced with such conditions and with such an attitude on the part of the Commission, were not enthusiastic about investing additional moneys in the gas department for the improvement of service, but rather took the view that it was a sort of necessary evil attached to the electric business or to put it another way, they had the bear by the tail and couldn't let go. One thing they determined, however, that they would throw no more good money after bad, than they were absolutely forced to do. As a consequence the gas properties were barely kept operative, necessary improvements were deferred just as long as possible and service conditions suffered accordingly. Public relations were very unsatisfactory. Complaints were numerous, and when it was finally determined about 1922 to again go before the Commission asking for some relief, serious opposition on the part of the public was met.

CONTRAST this situation with that which took place after 1920 when a new management took hold of the affairs of the company and its policies were reversed. It was recognized that if the company were to be made to earn a satisfactory return, first of all the management and owners must have faith in the future of the business and must give

(Continued on Page 53)

COMMUNITY PROGRESS
Volume 1 October 9, 1926 Number 10
FORT SMITH LIGHT AND TRACTION
R. C. COFFY, Gen'l Mgr.
COMMUNITY PROGRESS
October 20, 1926
Volume 1
Number 11
Fort Smith Light and Traction Co.
R. C. COFFY, General Manager
COURTEOUS PERSONAL ATTENTION TO EVERY CUSTOMER
FORT SMITH LIGHT AND TRACTION COMPANY
R. C. COFFY, Gen'l Mgr.
Courteous Personal Attention to Every Customer
COMMUNITY PROGRESS
Volume 1 October 17, 1926 Number 49
Fort Smith Light and Traction Company
R. C COFFY, General Manager
Courteous, Personal Attention to Every Customer

This Utility Strikes *a* New Note *in* It's Good-Will Advertising

By GEORGE H. FINLEY
Managing Editor, WESTERN GAS

GAS company advertising may be aimed at selling appliances, or at marketing securities, or it may be designed to achieve that more intangible sale measured in terms of public relations. Each form is needed in its place. Sometimes a happy combination of appeal may be produced in the company's message, and it is often true that the best kind of good will advertising is that which is put over by the merchandising department.

There is an abundance of precedent for the man who would write good sales copy for the gas company, for the problem is one of good merchandising, and what has succeeded in other lines of selling can be adapted to the special needs of the gas company. This is not to say that the task of stimulating appliance or stock sales through advertising is a simple one—it is merely to state that it may proceed along recognized lines of good sales practice.

GOOD PRECEDENT LACKING

But the path of the writer of good-will copy, on the other hand, is comparatively uncharted. There is an abundance of precedent, but, unfortunately, much of it is not illuminating. Much "good-will" advertising is that in intention only. In reality there has been a dead sameness about many gas companies' efforts along this line, and the net impression that has been left with a considerable portion of the gas-using public has been that utilities feel obligated to buy display space in the newspaper, whether or not they derive any direct benefit from it. While most good-will advertising at least has been harmless, it has done too little to link the company closer to those whom it was designed to reach.

Perhaps the chief criticism which might be levelled at good-will advertising in general is that it has not possessed the vital spark of *interest*. The theme of "Service" has been turned this way and that, and worn so threadbare that a good number of newspaper readers pass the gas company advertisement by without a second glance.

In the face of this too general situation it is a relief to turn to an experiment one company has made in this field of good-will advertising—an experiment which has brought traceable returns in increased public interest in the gas company's message, and in a direct gain of company friends among those who were affected by this experiment.

The Fort Smith Light and Traction Company of Fort Smith, Arkansas, made a canvass of some of its newspaper-reading friends a little more than a year ago and became convinced that its advertising efforts of the past had failed to catch the interest of the community. Company advertising was going unnoticed, and something had to be done about it. As Robert C. Coffy, vice-president and general manager of the company, put it, "No advertising is of any value unless, first, it is read, and, second, a worth-while thought is left in the reader's mind." The Fort Smith utility felt in particular that much of the syndicated good-will advertising of the current type did not fill the bill for a small community, of 35,000 population or less, in which class Fort Smith fell.

A COMPANY TABLOID

Mr. Coffy conceived the idea of using company newspaper space for a tabloid "newspaper," the peculiar property of the company, yet containing items relating to community activities and business enterprises—and written in a light vein calculated to catch and hold the interest of readers.

Several numbers of "Community Progress," which resulted from the idea of Mr. Coffy, are shown above. The company's usual space is three columns by ten inches, which has been divided into two columns to make the tabloid. The tabloid's name was made the feature of a contest, which developed over

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A relic of California's colorful past, this adobe brick dwelling is more than 100 years old

Gas Fuel *in the* Ceramic Industry

FIRING BUILDING BRICK

By LEE HOLTZ

MR. HOLZ, assistant superintendent of distribution for the Southern California Gas Company, is writing *Western Gas* a series of articles on special phases of the general subject "Gas Fuel in the Ceramic Industry." His description of the gas installation of the Monolith Cement Company appeared in our April issue. This month, in addition to reviewing some of the ceramic industry's background, he writes on the burning of building brick. And in our August issue there will be published a discussion of gas in the manufacture of vitrous ware. Future issues will contain further installments of the same series.

THE ceramic industry is one embracing the manufacture of clay and glass products and its demands in respect to fuel burning are among the most delicate and exacting of all operations where the application of heat is the essential requirement.

To fully cover this most interesting subject in all the phases of fabrication and the various uses of fuel, considerable space would be necessary. Therefore, the writer will confine himself to methods as they exist on the Pacific Coast, and particularly to Southern California, where the Southern California Gas Company is distributing some 18,000,000,000 cu. ft. of natural gas annually to the ceramic industry.

Clay working probably represents one of the oldest forms of industry established in the United States. Some very interesting early history and romance is connected with what we contemplate today as a highly developed enterprise.

It can undoubtedly be said that the real development and exploitation of the clay products industry began in the Eastern part of our country. The early colonists having left homes of brick and stone construction in their own countries, immediately set forth to construct ones of equal durability in their adopted land to which they had migrated. However, the making of clay products in this country began long before the white settlers set foot upon our shores. The Indians in the Southwest were active in the production of adobe brick for their dwellings as well as pottery, which was of unique design and of characteristic decoration. Brick, then, really represents the earliest form of the clay working which means so much to our present day convenience and comfort. One is impressed by the remarkable state of preservation of the old adobe brick dwellings that were once the homes of such men as Don Pio Pico, Governor of California in 1845-1846, and many others of that period. Some of these buildings have withstood the elements for more than a century.

Lee Holtz

The realization of this fact was what prompted a man by the name of Mr. Zinns to establish a brickyard in the town of Sutterville in the year of 1847, and this is said to be the first of its kind in the State of California. This year he made 40,000 brick, and the following year, 100,000. From this period the industry expanded rapidly. By the year 1852 there were many long established yards supplying San Francisco.

As a matter of comparison, it will be interesting to know that more than 300,000,000 common brick were made in Southern California in 1926.

Gladding, McBean & Company, a representative establishment of clay products and a present day customer of the Southern California Gas Company, were making clay pipe in San Francisco in the year 1857. They mined some of their clay in Lincoln, California, where they now have an extensive plant and have made such products as pressed brick, terra cotta, roofing tile, etc. This company has expanded to such an extent that they operate several other plants on the Pacific Coast, two of which are in Los Angeles.

Los Angeles has for some years been an important center for the manufacture of brick, along with many other products, such as floor, roof and bath tile, flower pots, sanitary ware, porcelain ware, etc.

The Simons Brick Company started operating in the year 1887 and begun the manufacture of pressed brick in 1903. In the year 1906, they developed and manufactured fireproof building brick and roofing tile and are still very progressive in exploiting their wares.

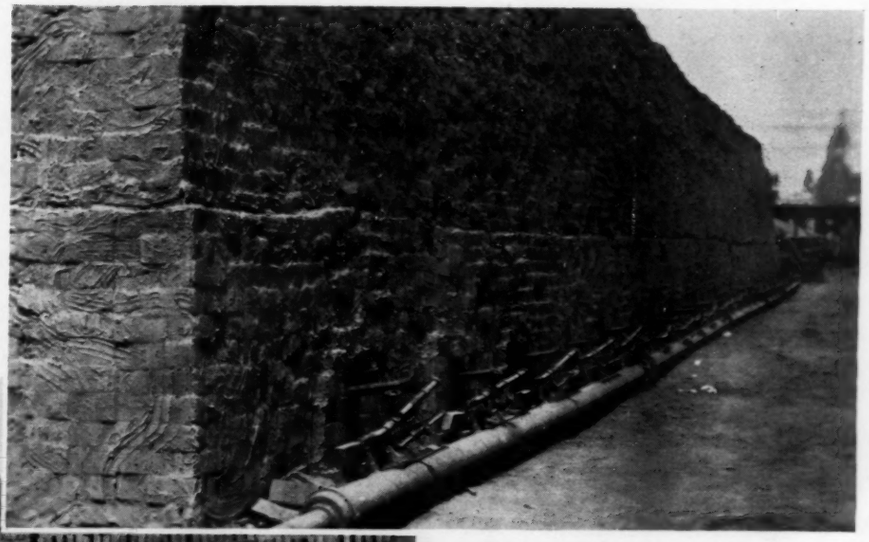
The Los Angeles Pressed Brick Company also started pressed brick operation in the year 1887 and in the following year included architectural terra cotta and hollow tile. In 1898 they began the manufacture of roofing tile, mantle and hearth tile; and in 1907, enamel brick and terra cotta. These firms, which appear to have been the pioneers, obtained all their clays from Riverside, Orange and Los Angeles Counties.

The ceramic industries are attracted to Southern California by reason of its numerous advantages, viz., ideal climatic and labor conditions, abundance of raw material, and especially natural gas, with its high calorific value, practically smokeless flame, and its reasonable rate

—all-important factors, considering the fact that fuel and its application governs practically 75 per cent of the manufacturer's problems.

Natural gas is a dominant factor in production, irrespective of cost. It is easily regulated and controlled, is clean, eliminates ash, reduces labor and its cost, does not require atomization, and obviates the necessity of acquiring and maintaining valuable storage space, as is the case with other fuels.

Before considering the various methods of manufacture, it will be of interest



ABOVE: *Burner installation of 1,000,000 brick Scoven kiln.* LEFT: *Showing the arch construction for a Scoven kiln*

to know that there are three periods of burning which take place in the complete firing of all clay wares. The first period is known as the *water smoking*. After the brick have been dried there is still hydroscopic water or the moisture that is contained in the pores of the clay, together with the water that is added mechanically for shaping and tempering, which must be thrown off. In this stage of burning, the temperature is raised according to the kind of ware being burned, and, if considerable care is not exercised, much damage can be done which would lessen the market value of the finished product. If the temperature is raised too quickly, scumming and checking are apt to be produced.

After a temperature of 250 to 350 deg. F. has been obtained, the second period of firing is begun, known as *oxidation*. By this time all the hydroscopic water has been completely driven off and the settle of the brick or shrinkage of the clay takes place. The attainment of color is also a purpose in oxidation. This change is effected by the absorption of oxygen from the air admitted to the kiln in excess of that required for combustion. A temperature of 1200 deg. F. is considered about the limit of this period for most wares. At this temperature, the water in the base of the clay is thrown off. This varies in amount of moisture content from 3 to 14 per cent. After the removal of this water, the clay becomes more porous, leaving more of an opening for the absorption of oxygen. Natural gas has the particular advantage at this stage of the burning because it has less carbon and is free from sulphur.

Third and last is the *vitrification* period. Vitrification is the hardening of the clay body to the point where it attains its maximum density and strength and its resistance to the absorption of water. This is nothing more than the complete shrinkage of the clay. During this period the large amount of excess air is no longer necessary as is the case in the water smoking and oxidation periods. The drafts may be choked and the temperature raised without undue consumption of fuel. However, it becomes necessary to close all openings within reason where outside air (other than that taken in with the burner) may be admitted. This period requires more careful observation, but by the proper attention will require a lesser amount of fuel. This period of the firing is completed anywhere from 1800 deg. F. to 2750 deg. F., depending upon the ware being fired.

Building brick includes common, pressed, glazed and enamel. However, owing to the lack of space, the writer will confine himself only to the methods of burning.

Usually, for economical reasons, common building brick are burned by piling or setting from 250,000 to 1,000,000 sun-dried brick in an open space in the yard. While piling the brick, tunnels are left to be used as combustion chambers for firing the fuel. These tunnels or arches, as they are called by the brick men, are located at the base of the kiln, and are 52 inches apart. The tunnels run through from both sides of the kiln, but are blocked in the center by a solid wall, which is essential for an even distribution of heat. For a kiln of about one million brick, there would be twenty-five arches on each side. These kilns are known as either the "Clamp" or "Scoven" type; the difference being that the outside walls for the "Clamp" kilns are stationary. In either case, the outside walls are plastered with wet clay and allowed to dry.

Ordinary gas burners of the Bunsen type, drilled to one-quarter of an inch, are quite satisfactory. Usually two burners are placed to the arch, one burner directly over the other and in the center of the arch. The top burner fires straight into the arch, while the bottom burner is tilted so as to allow the flame to strike the floor of the arch. This acts as a pilot for the top burner, which is the one that is the most imperative.

In firing this type of kiln with oil or gas it is quite necessary to use high

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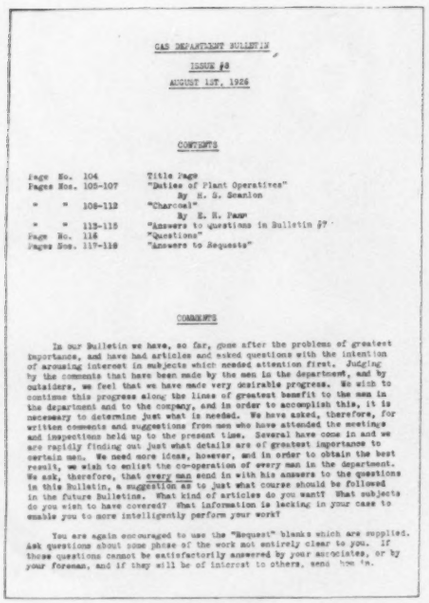

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ISSUE #8

AUGUST 1ST, 1926

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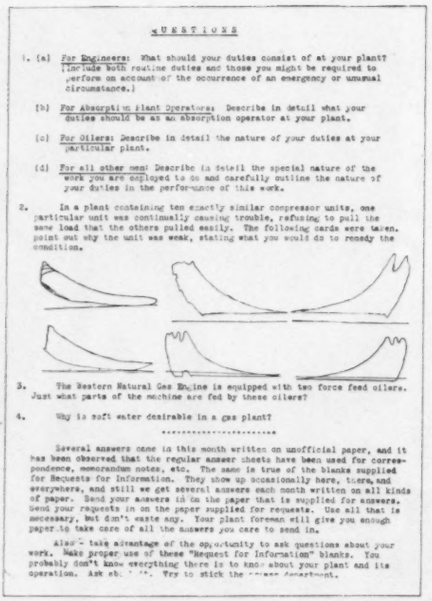
COMMENTS

In our Bulletin we have, so far, gone after the problems of greatest importance, and have had articles and asked questions with the intention of arousing interest in subjects which needed attention first. Judging by the comments that have been made by the men in the department, and by outsiders, we feel that we have made very desirable progress. We wish to continue this progress along the lines of greatest benefit to the men in the department and to the company, and in order to accomplish this, it is necessary to determine just what is needed. We have asked, therefore, for written comments and suggestions from men who have attended the meetings and inspections held up to the present time. Several have come in and we are rapidly finding out just what details are of greatest importance to certain men. We need more ideas, however, and in order to obtain the best result, we wish to enlist the co-operation of every man in the department. We ask, therefore, that every man send in with his answers to the questions in this Bulletin, a suggestion as to just what course should be followed in the future Bulletins. What kind of articles do you want? What subjects do you wish to have covered? What information is lacking in your case to enable you to more intelligently perform your work?

You are again encouraged to use the "Request" blanks which are supplied. Ask questions about some phase of the work not entirely clear to you. If these questions cannot be satisfactorily answered by your associates, or by your foreman, and if they will be of interest to others, send them in.

Figure 1



QUESTIONS

1. (a) For Engineers: What should your duties consist of at your plant? [Include both routine duties and those you might be required to perform on account of the occurrence of an emergency or unusual circumstance.]

(b) For Absorption Plant Operators: Describe in detail what your duties should be as an absorption operator at your plant.

(c) For Oilers: Describe in detail the nature of your duties at your particular plant.

(d) For all other men: Describe in detail the special nature of the work you are employed to do and carefully outline the nature of your duties in the performance of this work.

2. In a plant containing ten exactly similar compressor units, one particular unit was continually causing trouble, refusing to pull the same load that the others pulled easily. The following cards were taken. Point out why the unit was weak, stating what you would do to remedy the condition.

3. The Western Natural Gas Engine is equipped with two force feed oilers. Just what parts of the machine are fed by these oilers?

4. Why is soft water desirable in a gas plant?

.....

Several answers came in this month written on unofficial paper, and it has been observed that the regular answer sheets have been used for correspondence, memorandum notes, etc. The same is true of the blanks supplied for Requests for Information. They show up occasionally here, there, and everywhere, and still we get several answers each month written on all kinds of paper. Send your answers in on the paper that is supplied for answers. Send your requests in on the paper supplied for requests. Use all that is necessary, but don't waste any. Your plant foreman will give you enough paper to take care of all the answers you care to send in.

Also - take advantage of the opportunity to ask questions about your work. Make proper use of these "Request for Information" blanks. You probably don't know everything there is to know about your plant and its operation. Ask about it. Try to stick the same department.

Figure 2

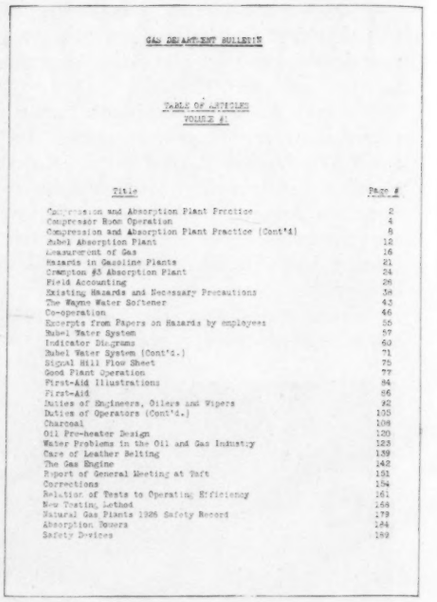


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Figure 3

Pan American Gas Department Bulletin Solves Efficiency, Safety Problem

¶ About two years ago the Gas Department of the Pan American Petroleum Company, of which H. L. Eggleston is manager, began to publish a bulletin circulated to employees of the department throughout the company's system of natural gasoline plants, and directed at stimulating efficiency and lowering the fire and accident record. The bulletin has been remarkably successful, and the editors of *Western Gas* feel that a description of it will be of much interest to our readers, especially so in view of the fact that the department bulletin idea is susceptible of application in almost any company. The article which follows presents something of the background of the Pan American's problem, and discusses the nature of the bulletin which has been used to meet it.

By CRAIG ESPY
Western Gas

IN all industry there has always been present an urgent need for some means of controlling the efficiency with which the work of organizations is conducted, and for controlling to a certain extent the attitude of the individual employee towards his work to the end that accidents will be minimized and safety and efficiency promoted. The larger the organization the greater the need for some such control, because, in a small establishment such control is effected through the ordinary channels of management. In the small organization the man at the head is in personal touch with most of his employees, and can, by personal example and day-by-day contact, inspire his men to produce a satisfactory result.

H. L. Eggleston, Mgr. Pan Amer. Petroleum Co. Gas Department

As an organization grows, however, it is necessary to take some other means to stimulate the attentiveness of the individual so that he will work safely and efficiently. In the past this has been attempted in many different ways. Some years ago in large or growing concerns there appeared the so-called "efficiency man." This man checked up on labor problems; placed the men of the organization in positions for which they were best suited; determined how many men could most efficiently handle a given job; and co-ordinated the work of different departments of the organization so that there would be no lost motion. A little later, as the efficiency of individual departments increased, the efficiency man became the head of the personnel department, and applicants for jobs were selected more carefully and were placed where their ability would be most valuable. In this way the standard of workmanship was improved so that the character of the employee and his ability to perform certain work was raised to a higher plane.

During the last few years the safety angle has been brought to the foreground, and the old-time efficiency engineer and the later personnel department manager became the key man in safety programs which had for their main objective the prevention of accidents and the administering of first aid.

In the petroleum industry the matter of fire prevention and fire fighting is of necessity more serious than in most other industries, and these branches also came directly under the control of the safety engineer. In some industries there is a separate safety engineer whose sole duty it is to encourage safe practices; to supervise in the administering of first aid; and sometimes to look after fire prevention and fire fighting, although fire prevention and fire fighting are in some cases taken care of by a fire marshal.

The work of a safety engineer or a personnel department manager is frequently facilitated by inspections and organization meetings, and by bulletins or printed posters, and frequently the management of the company holds meetings and inspections coincident with the

(Continued on Page 48)

Determining Capacity *and* Efficiency *of* Warm Air Furnaces

By Walter M. Berry
Consulting Gas Engineer

A FEW months ago the writer submitted to the members of the American Gas Association Committee on Gas Furnace Specifications, through Elroy Payne, a member of that committee, a simple and accurate method for arriving at the capacity and efficiesy of warm air furnaces. In recent preliminary tests on gas furnaces made by the American Gas Association Laboratory this general procedure has been followed and the method is also being used by the Gas Furnace Association of Southern California in its recently installed laboratory.

Walter M. Berry

The principal feature of this method of testing a gas furnace lies in the method of measuring the quantity of heat delivered by the furnace. The air going through the furnace is accurately measured before it enters the furnace instead of being measured after it leaves the furnace. Since there is no limitation to the pressure under which the air is to be measured, it is possible to use any device that is available for measuring air, such as a pilot tube, electric meter, displacement meter, or orifice meter.

The principal advantage of measuring the air at the inlet of the furnace is due to the elimination of a great deal of the precise calibration of anemometers and testing equipment that has been found necessary by the University of Illinois in their tests on hot air furnaces. It greatly reduces the time necessary for testing a gas furnace and the accuracy of the results are limited only by the accuracy of the measuring instruments—usually well within two per cent.

The general arrangement of the apparatus is shown in the diagram. The cold air intake is supplied with one or more shutters so that the air can be taken into the furnace directly from the room or through the metering device. The blower should be large enough to supply the maximum air delivery of the furnace. The thermometers are placed in the hot air pipe or pipes at such distance that they are not affected by the radiation from the combustion chamber. In all but the smallest hot air pipes there is some difference in temperature in different sections of the pipe and in order to arrive at a good average for the whole pipe it is desirable to divide the pipe into three concentric circles of equal area. Thermometer T-1 will give the temperature in the inner circle, thermometer T-4 will give the temperature in the middle circle. The greatest variation in temperature is between the top and the bottom of the pipe and the average of T-2 and T-3 thermometers should be used for the temperature in the outer circle. The three readings should then be averaged for the average temperature in the hot air pipe.

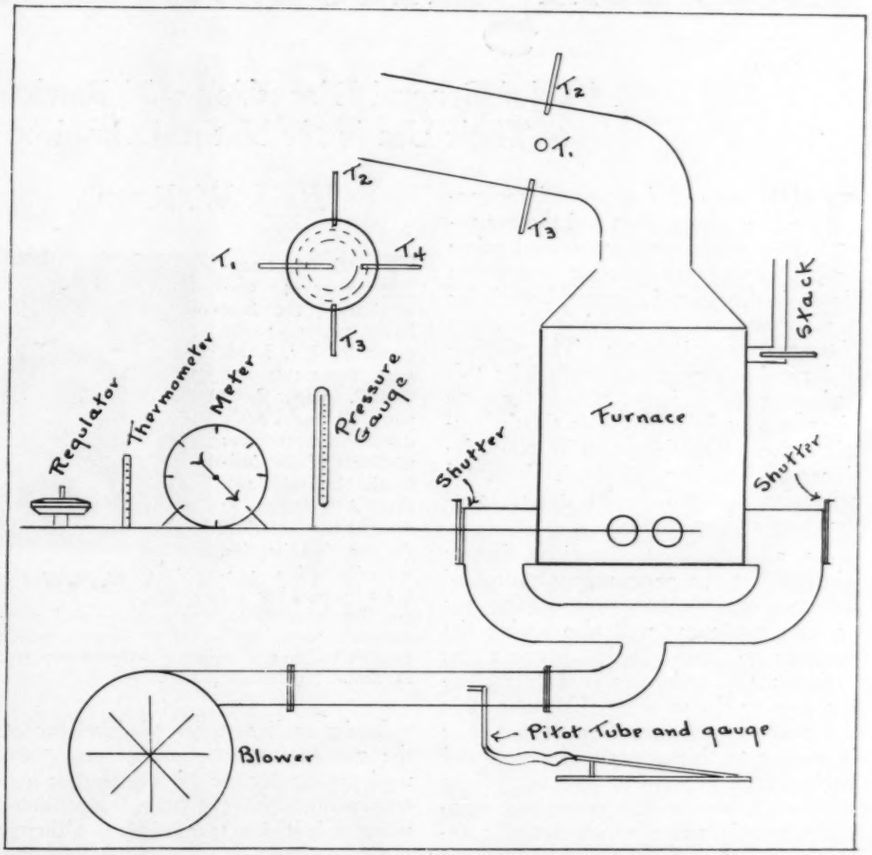


Diagram showing arrangement of apparatus used in furnace testing

In starting the actual test after all the apparatus is first calibrated, the gas rate is adjusted, the air mixer set to give the desired character of flame and temperature readings started. When the temperatures in the hot air pipes and the stack come to an equilibrium, these are recorded as the maximum temperatures with that particular gas rate and other conditions of adjustment. The blower is now started, the shutters closed on the cold air intake from the room, and the volume of air regulated at the blower so as to duplicate as nearly as possible the temperatures in the hot air pipes and the stack. As soon as the temperatures have again come to an equilibrium these are recorded as the maximum temperature with the volume of air passing through the furnace as shown by the air meter.

The test data necessary for making the calculations are shown below:

1. Test No.
2. Date
3. Gas Rate (Cu. ft./hr.)
4. Correction factor for meter error
5. Gas Rate corrected for meter error
6. Gas Pressure (Inches of water)
7. Gas Pressure (Inches of Hg.)
8. Barometric pressure (Inches of Hg.)
9. Total pressure of gas (Inches of Hg.)
10. Temperature of gas (Deg. F.)
11. Correction factor of gas volume
12. Corrected gas rate (Cu. ft./hr.)
13. Heating value of gas (B.t.u./cu. ft.)

(Continued on Page 51)

Gas Engines *and* Compressors

A Brief General Discussion *with* Particular Reference *to* Their Use *in the* Natural Gasoline Industry

By J. W. REED

THE use and function of reciprocating compressors and the gas engine as the most economical prime mover in natural gasoline extraction plants, is a matter of common knowledge to most everyone interested in this phase of the petroleum industry. The relatively large investment represented by this equipment and its importance in the cycle of operations in such plants should justify a careful consideration by plant designers and engineers of the fundamental principles involved in its design, construction and operation.

An analysis of the various factors which affect the performance rating of both gas engines and reciprocating gas or air compressors will also enable the engineer to more fairly compare the various makes and types of such machinery now on the market. Unfortunately the practices of various manufacturers in respect to this queston of rating and performance guarantees are not all in agreement, but the thermodynamic principles and formulae which actually determine these questions are, however, not subject to debate.

A brief outline first, of the history and development of gas engines, together with a discussion of the trend of modern design, may be of interest.

PART I

The first internal combustion engine was made by Huyghens in the year 1680. Gunpowder was used as its fuel instead of gas or oil, but it was not a practical success. In 1820 Cecil invented an engine which derived its power from the explosion in a cylinder, of hydrogen gas mixed with air. This engine was not a practical success either, but in 1860 the first practical engine was developed by Lenoir, employing gas as fuel. In 1876, Otto produced an engine which worked on a principle known as the four stroke cycle and which became a practical success. This cycle, as the name indicates, is completed in four strokes, suction, compression, power and exhaust. In 1880, Dugald Clerk invented an engine which partook of the nature of the Lenoir, in that it was a two stroke engine and of the nature of the Otto in that the mixture was compressed before explosion. These two types were the forerunners of the modern two and four stroke cycle engines.

J. W. Reed

THE accompanying discussion is the first half of a paper given by Mr. Reed, who represents the C. & C. Cooper Company on the Pacific Coast, before the members of the California Natural Gasoline Association at their May meeting. As the title implies, the discussion presents something of the development of gas engines and compressors, stressing the chief factors which govern the use of this important equipment in natural gasoline plants.

In its earlier stages of development, the gas engine as a prime mover was used principally for driving electric generators and other types of machinery, using a belt for transmission, although the direct connection of generators soon came to be recognized as an advance in design, particularly on large units. Early in this century the use of the gas engine driving compressors in natural gas compression plants was developed and has since become standard practice in this work.

In the gas and oil fields of West Virginia, Pennsylvania and Ohio, where the first work of compression and transmission of natural gas was carried on, on any considerable scale, the demand was principally for large horizontal double-acting units of 500 H.P. or more. For obvious mechanical reasons, a direct-connected compressor was required and four-cycle engines were also demanded by the gas companies because of their superior economy.

A number of interesting installations of large engines operating on producer gas have also been made in the past twenty-five years. One of the largest of these was made by the Indiana Steel Company at Gary, Indiana, consisting of 16 gas blowing units and 17 direct-connected electric generator units. The engines were of the twin tandem, horizontal, double-acting four-cycle type, with power cylinders 42″ in diameter by 54″ stroke, each engine developing 4000 Brake H.P. at approximately 80 R.P.M. They were built by Westinghouse and Allis Chalmers. The Bethlehem Steel Company also has a very large plant of the same type, the engines being designed and built by themselves.

Except in a few cases where conditions justified its application, the large double-acting engine of 500 H.P. or more has not been used to any extent for compression work in natural gasoline extraction plants. This has been primarily due to the fact that in most cases the total horsepower required is not great enough to call for more than two, three, or possibly four large units, and the desired flexibility of power equipment could only be obtained by the use of smaller units. Generally speaking, where the total horsepower required amounts to 2000 or more, a saving in both construction and operating costs can be effected by the use of units of 350 to 500 H.P. In a plant requiring, for example, 5000 to 6000 H.P. the installation of small units of 150 or 200 H.P. would be obviously impractical and machines of 750 to 1000 H.P. capacity would be the logical size. The difference in both construction and operating costs in a plant of this size would be enormously in favor of the larger units. Local conditions in some cases might be of sufficient importance to offset the advantages to be derived by the use of large units, even where their use is otherwise indicated. In the natural gas industry, however, a majority of the large main line booster plants are equipped with units of from 500 to 1000 horsepower.

SMALL ENGINES

The first small engines of approximately 80 and 160 H.P. were largely of the two-cycle type, both belt and later direct drive. Then about ten years ago, one manufacturer placed on the market a direct-connected four-cycle compressor unit in two sizes—80 and 160 H.P. Within the last two or three years, seven new horizontal four-cycle direct-connected compressor units of approximately these same sizes have been placed on the market. Included in these are machines built by the two principal builders of two-cycle engines.

Theoretically, the two stroke cycle engine should develop twice the power given by a four stroke cycle engine of

(Continued on Page 44)

The Campfire Girls above posed for the San Francisco Unit of the Gas Appliance Society in the Palace Hotel kitchen, the picture being one of several used in preliminary publicity for the San Francisco menu contest.

Appliance Men Hold Menu Contest

By W. H. MIXTER

Assistant Secretary, Gas Appliance Society of California

IN connection with the Spring Campaign annually conducted by the Gas Appliance Society of California, and this year held the week of May 1 to 7, there was for the first time incorporated a menu contest, participated in by eleven of the society's units. The contest was conducted locally by the various units, and while it represented somewhat of a departure as a Spring Campaign activity, the results achieved were decidedly encouraging. Contests were run off by the following units: San Francisco, East Bay, Sacramento, San Jose, Chico, Marysville, Sonoma, Vallejo, Napa, San Raphael and Mill Valley—and in these local contests a total of 1150 entries were developed.

Seventy local prize winners resulted from the individual community contests, and the menus submitted by local winners were judged in the finals in competition for the major prizes. Winning menus appear on this page.

To arouse the necessary interest in the contest, and to make known the terms on which menus were to be entered, a pamphlet was prepared and 40,000 copies distributed in the towns concerned. They were given out by the appliance dealers and the gas company offices, in the schools, to housewife leagues, parent-teacher associations, Campfire Girl groups, and were enclosed with letters to selected lists.

As an outline of the terms of the contest may be of some value the contents of the pamphlet referred to above are given herewith:

"The purpose of this contest is to give housewives an opportunity to present their ideas for the best dinner menu for four people—the total cost of food material not to exceed $2.00.

"The menu should include food combinations which are suitable from the standpoint of health, and which are well balanced—in order to meet the body requirements of growth and maintenance. Naturally—it should be attractive and pleasing to the eye as well as to the palate. This will bring up the little but necessary points of form, color, variety and texture. Flavor plays an important part, too. Thus—a meal composed of macaroni and cheese, mashed potato, creamed turnips, bread and butter and baked bananas is bland or flat in flavor, unappealing to the eye because of lack of color, and being all soft foods with no special form, it is not especially appetizing—though good from a nutritive viewpoint. Novelty and impression also play a part—an unusual dish or one associated with memory such as Grandmother's Strawberry Shortcake will make an otherwise commonplace meal most inviting!

"No part of the meal should be sacrificed by choosing expensive cuts of meat. The cheaper cuts of meat can be pleasingly utilized—pot roast, casserole dishes, braised meat and stews. The average serving of meat per person should be about four ounces. The meal should be complete.

"Oven cookery lessens time in preparation, and economy of time in meal planning is important.

"Hence, the following points will be considered in judging the menus:

SCORE CARD FOR JUDGING

1. Suitable food combinations.....50
   Complete and well balanced combinations from the standpoint of health.
2. Appearance 15
   Form and color.
3. Flavor 15
4. Texture 10
5. Variety, general impression.....10

"Local prizes are being awarded by the individuals units of the Gas Appliance Society. The prizes are on display in the windows of the various stores. The winning menus from each city will be forwarded to the State-wide Gas Appliance Society headquarters, where they

(Continued on Page 47)

THE FIVE WINNING MENUS

1.

Celery Curls
Tomato Soup *Crackers*
Baked Ham and Apples
Fresh Green Peas
Baked Potatoes Stuffed
Shredded Lettuce *French Dressing*
White Bread *Butter*
Strawberry Jello
Whipped Cream
Wafers
Small Black Coffee

2.

Mock Mushroom Salad
Cream of Celery Soup *Crackers*
Broiled Lamb Chops
Buttered Asparagus *Spinach*
Whole Wheat Bread
Orange Delight *Vanilla Wafers*
Coffee

3.

Fruit Cocktail
Breaded Veal Cutlets Baked
Gravy
New Potatoes and Fresh Peas en Creme
Rose Tomato Salad
Bran Muffins *Pickled Beets*
Pineapple Delight
Salted Almonds *Coffee*

4.

Bouillon Italliene
Saltines
Onion Roast and small Carrots
Delight Creme
Cafe Noir
Mints

5.

Clear Soup *Saltines*
Tomato and Celery Salad
Veal Loaf
Baked Spinach *Scalloped Potatoes*
Baking-Powder Biscuits *Currant Jelly*
Pineapple Upside-down Cake
Coffee

PACIFIC COAST GAS ASSOCIATION

A Department Conducted by Clifford Johnstone, Executive Secretary

Secrecy Shrouds 1927 Convention Arrangements

PLANS for the Association's Thirty-fourth Annual Convention are developing rapidly but owing to the secrecy surrounding the entertainment arrangements nothing can be divulged as yet. When asked for a statement to publish in this issue of *Western Gas,* M. F. Wales, Chairman of the Convention Committee, assumed his most dignified and official mien and said:

"As announced, the Convention will open at Santa Cruz, Monday afternoon, September 12, and close on Friday evening, September 16. Other than the statement that the plans for entertainment are almost complete and that any member of the Association who does not attend is a poor fish and will regret it to his dying day, I have nothing to say."

Inasmuch as the reports and papers which will make up the business sessions are not due at the Secretary's office until June 15, we cannot tell much about the business program. It is significant, however, that each of the Section Chairmen has told the Secretary privately that his section has the Basford Trophy cinched, and that the Association is going to go broke buying Gold Medals.

Announcements of the Safety First Contest which will be a feature of this Convention have already gone forth to company members. Each gas company will be entitled to enter one team. The winning team will hold, for a year, cups donated by F. J. Schafer, our last year's President, and by the Society of Safety Engineers of California. In addition it will receive a cup which can be permanently added to its trophy case and each member will be awarded ten dollars in gold. The second team will be awarded a permanent cup and each member five dollars in gold. The third team will be awarded a cup. The competition will be in charge of E. W. Bullard who was director of the State Contest last year.

RESEARCH FELLOWSHIP

The committee in charge of the Pacific Coast Gas Association's Research Fellowship in Gas Engineering at the University of California has announced that the Fellowship for 1928 has been awarded to Frank W. Gerard who is just graduating from the Washington State College at Pullman with the degree of B. S. in Chemical Engineering. Mr. Gerard has an excellent record in his scholastic work and the course of study which he has pursued at Washington especially fits him for further study along gas engineering lines. He will take up his work at the University of California when college opens in August and will receive from the Association the sum of $1000 to pay his expenses during the year.

Below are a few P. C. G. A. men in Portland, May 5, en route to Spokane. Reading left to right they are: LEFT—B. S. Pedersen, E. L. Hall. CENTER—B. S. Pedersen, Robt. J. Thompson, Jas. F. Pollard, Clifford Johnstone, J. H. Gumz, E. L. Hall, Geo. W. Smith. RIGHT—Jas. F. Pollard, Clifford Johnstone, both in act of missing the ball. A Portland Gas & Coke Co. inter-departmental baseball game was interrupted to take these views.

COMMITTEE APPOINTMENTS

The Papers and Reports Committee, recently appointed by President Yard, is made up of C. B. Babcock, C. B. Babcock Company, San Francisco; Henry Bostwick, Pacific Gas and Electric Company, San Francisco; and William Moeller, Jr., Midway Gas Company, Los Angeles.

Membership of this year's nominating committee for 1928 officers is as follows: F. S. Wade, Southern Counties Gas Company, Los Angeles, Chairman; E. L. Hall, Portland Gas & Coke Company, Portland; John D. Kuster, Pacific Gas and Electric Company, San Jose, Calif.; H. R. Basford, H. R. Basford Company, San Francisco; W. M. Thompson, Reliance Manufacturing Company, Pasadena.

President W. S. Yard announces the following appointments to the Awards Committee:

Accounting Section—C. W. Platt, Portland Gas & Coke Company; F. E. Seaver, Los Angeles Gas & Electric Corporation.

Commercial Section—L. F. Galbraith, Pacific Gas & Electric Company; R. J. Thompson, Welsbach Company.

Public Relations—W. H. Barton, Portland Gas & Coke Company; F. H. Bivens, Southern Counties Gas Company.

Technical Section—R. S. Fuller, Pacific Gas & Electric Company; J. E. Kelley, Western States Gas & Electric Company.

Symposium *on* Electric Competition Features Northwest Conference

On This Page Is Given *a* Review *of the* P.C.G.A. Spokane Meeting

ABOUT eighty representatives of the gas industry assembled in Spokane, Washington, on May 6 and 7, the occasion being the annual Northwest Conference of the Pacific Coast Gas Association. The meeting was notable in that gas companies in six states were represented, and important because it is the first time in the history of the Association that problems arising from the active competition of electric energy in the domestic cooking and water heating field have been fully discussed.

The success of the conference is largely due to the efforts and hospitality of J. L. Stone and his co-workers of the Spokane Gas and Fuel Company. The dinner dance and entertainment on the evening of the sixth was enjoyed to the full, and on the seventh Mrs. Stone acted as hostess at a luncheon to the visiting ladies.

W. S. Yard of San Francisco, president of the Association, presided at the two business sessions, first introducing J. F. Pollard, General Manager of the Coast Valleys Gas & Electric Company, whose paper "Public Relations in Small Companies" appears on another page of this issue of *Western Gas*.

The president introduced the symposium on Electric Competition by quoting from a paper read in 1879 before the American Gas Light Association. At that time the electric light was just breaking into prominence and the author expressed the opinion that while electricity might occupy a limited place in artificial illumination, the superiority of the gas light was so evident that gas men need not be alarmed. Mr. Yard pointed out that this same attitude was being displayed by many gas men toward electric cooking and water heating and that it was the purpose of the Association in arranging this symposium to bring out the facts regarding the spread of electricity in the domestic field so that its importance would not be minimized.

DOMESTIC COOKING

The first speaker was H. E. Seagraves, sales manager of the Tacoma Gas & Fuel Company, who said in part: The electric range load has been recognized as a most attractive kind of business for many power companies and the range manufacturers have built beauty and economy into their product. Contrary to the usual thought of gas men they are actually very satisfactory in their performance. Their use is being fostered in some localities by extremely low rates but a considerable business has been developed with rates as high as 5½ cents per Kwhr. In 1926 there were 304,500 electric ranges in use in the United States. A survey of 2348 ranges on the lines of one company over a five year period revealed that 2½ service calls were made per range at a cost of $1.33 per range per year.

H. E. Seagraves

The electric range has been sold in the Pacific Northwest on the basis of being the ultra modern and elite kitchen equipment. This has been especially effective in apartment houses and the gas companies have shown a decided lack of wisdom in not fighting it.

WATERHEATING

The electric waterheater is becoming a strong competitor in the Northwest, where in some localities energy may be obtained for one cent per Kwhr. At this price it gives greater economy than can be obtained with gas at any gas rate now in effect in the Northwest. Whether sold on a metered rate or flat rate it offers very desirable business to the central stations and will be extended if possible. It is the most formidable competitor of the Tacoma Company and an electric range will nearly always follow it. Their performance is excellent.

RESTAURANTS

In some Eastern cities the heavy duty electric restaurant range has been introduced although it has only recently appeared on the Coast. (Mr. Seagraves here gave a table showing a number of electric installations ranging from 32 to 252 Kw connected load, 20 to 143 Kw demand, and monthly consumption from 6,000 to 92,000 Kwhr. The highest average rate was 1.9 cents per Kwhr for a cafeteria in Chicago and the lowest 0.9 cents per Kwhr for a cafeteria in Tacoma.)

The bake oven is a desirable load both for gas and electricity. Gas companies have neglected to give these large consumers the rates they are entitled to and the electric oven has found a splendid opening for permanently entrenching itself in this business. They are installed sometimes in spite of increased operating costs because of the advertising value which surrounds anything electric. There are large bakeries in Tacoma which bake nearly their entire product with gas but operate some electric equipment for the sake of advertising. The electric oven is satisfactory in its operation and only lower costs will hold this business to gas.

HOUSEHEATING

Electrical househeating has been tried in Tacoma for eight years at rates of ½ cent per Kwhr and is regarded as a failure. It is not a desirable load for the central station and the only reason such a low rate is offered for it by the municipal electric utility is to fulfill promises made to the voters when the project was started.

Gas men must recognize the superior merchandising methods of the electric men. The central stations have not entrusted the development of their load to the sale of appliances by retail establishments. They operate powerful sales organizations. They sell all load building merchandise far below list price. Gas companies must organize trained sales departments if they are to compete successfully.

In view of the complete failure of electrical househeating and the splendid systems which are possible with gas, it seems advisable for gas companies to encourage this load. It is easier to sell a furnace in a new house in Tacoma than it is to sell a range or water heater. Then the owner realizes that he must pay the high minimum charge anyway and that other appliances can be operated on the low excess volume charge. This method of obtaining customers is the life saver of the Tacoma company. Appliance sales for 1927 are 61 per cent over 1926 and the gas sendout has increased 17.5 per cent.

APARTMENTS

In Tacoma and Seattle electricity is sold to apartments in the same manner as to homes and is cheaper than gas to

the renter. The condition has been met by inducing apartment house owners to supply fuel as a part of the rent, paying through a master meter. Some of these owners who have both gas and electric apartments can see the advantage accruing from this arrangement. Not only is the operating cost of the gas apartment lower but the entire set-up is more desirable. The renter abuses the electric range and the upkeep is too high. It is confidently expected that many electrically equipped apartments will change over to gas.

THE PROBLEM IN SO. CALIFORNIA

Geo. Smith, district manager for the Southern Counties Gas Company at Santa Barbara, outlined the problem as it exists in the natural gas territory of Southern California. Very few definite data exist as to the extent of electrical competition in Southern California. The comparative investment costs are approximately five to one, but we know that the central stations have made these investments and are making more and that for a long time to come there will be surplus electrical energy looking for markets. There is a very considerable amount of energy consumed during the summer for the pumping of irrigation water and it seems that the logical development of the power companies' business would be a balancing winter load leading to the promotion of domestic househeating.

Geo. W. Smith

The gas industry should strive to meet the requirements of beauty and convenience which are the prime consideration of today's housewife. The gas company should take an active part in this development as it is too great a burden for the manufacturer to bear alone. We cannot hope to cope with the situation by the employment of inexperienced and low priced salesmen and each gas company should be in a position to recommend economical and satisfactory equipment for every purpose. The competition from electricity has very definitely pointed out that our new business departments must create new uses for gas and demand the development of appliances to serve these new uses.

Other things needed to thoroughly modernize our business are rate structures favoring large consumers and expressed in 100 cubic foot units, extension rules based upon revenue, and more attention to the service rendered to customers. There are thousands of gas consumers whom we believe to be entirely satisfied who think that blackened kettles, smoking burners, greasy kitchen walls and obnoxious odors are inherent with the use of gas. These people are in a receptive mood for any change which will eliminate these conditions and are live prospects for the electric salesman who does not hesitate to make the most unethical statements. Mr. Smith recommends that each gas company make (1) a house to house survey to determine service conditions and the extent to which electric appliances are in use, (2) a study of pressure conditions, (3) a study of purification conditions, (4) a study of its rate structure, (5) the establishment of a home service department and cooking schools, (6) put gas equipment in the domestic science departments of schools, (7) build up an efficient new business department, (8) establish better dealer and plumber cooperation, (9) stress the Blue Star Plan of the American Gas Association, (10) take steps to secure proper housepiping, (11) encourage gas appliance manufacturers to improve the appearance and efficiency of their equipment, (12) advertise to capitalize the romance of gas. He also recommended that the Association establish three standing committees composed of executives to study the competitive situation, one committee to function in the Northwest, one in Central California, and one in Southern California.

M. C. Hancock, manager of the Washington Gas & Electric Company at Aberdeen, cited a practical instance of competitive practice. A gas company and an electric company submitted bids on the installation of ranges in a fourteen-apartment building. Both bids were actual cost price but the electric wiring was thrown in free. The electric company also quoted a $2400 price on refrigeration. The contract was let on the basis of gas ranges and electric refrigeration, but the ranges finally went electric upon the electric company reducing its refrigeration bid to $1200 provided electric ranges were put in. As the electric range bid had originally been $1230, the result was that they were installed for $30. The apartment house owner could hardly refuse such a proposition. It is evident that the electric company was willing to pay almost any price to get the cooking revenue and gas companies will have to follow suit if they wish to retain the apartment house business. Where the user can be reached, gas has almost every advantage—speed, operating cost, appearance, and control. Mr. Hancock then read some very unethical advertising statements made by the electric range advocates. Contrary to the experience cited by Mr. Seagraves in Tacoma, Mr. Hancock has had very little waterheater competition and some electric heaters that have been installed have been replaced due to their slowness.

DATA ON CALIFORNIA COMPETITION

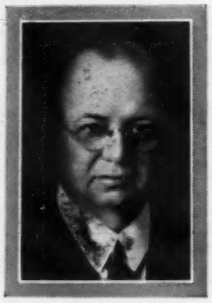
J. H. Gumz, industrial engineer for the Pacific Gas & Electric Company, San Francisco, outlined conditions in California. There are over 1,208,000 gas consumers in California and records indicate that 21,000 electric ranges were in use at the beginning of 1926. Some 10,000 more were sold during 1926 bringing the total to over 30,000. While many of these electric ranges were sold in non-gas territory, the 1926 sales amounted to one range for each 120 gas consumers. An analysis of electric range sales in a city containing 27,000 gas consumers revealed that 7.4% of the new residences installed electric ranges and 32.1% of the apartments. For the past 16 months this figure has become 50%. Mr. Gumz ascribed this condition to the fact that the housewife is demanding easier working conditions in the home, and the electric range selling argument is directed to meet this desire. He advocated more intensive selling to new homes and apartments, preferably by the gas company, and more attention to servicing appliances already installed.

CONDITIONS IN SPOKANE

A. A. Salmon, sales manager for the Spokane Gas and Fuel Company, said that the inroads of electricity had been serious and made a plea for the revision of rate schedules so that gas can compete on a price basis. Appliances should be selected and sold primarily for building load and not for a merchandising profit. Terms should be extended to five years if necessary and an effort made to install complete gas equipment on approval for free trial. He described the competition in Spokane as severe but fair and ethical. The first 12 kwhr of electrical energy cost 70 cents, the next twenty 5½ cents per kwhr, and all over thirty-two 3 cents. The water heating business is practically all on a flat rate, the charges being $2.00 per month for a 600 watt heater, $2.50 for 750 watts and 50 cents per month for each additional 250 watts. A combination of these two rates means that a customer is getting a rate close to one cent as the flat rate figures out less than 5 mills. An electric range is a requirement for receiving the flat rate water heating rate so the two are always found in combination. To meet this the Spokane company has developed a flat rate gas water heater which can be used in connection with the customer's own tank and a second heater when a new or larger tank is required. The first is made up in thirty and forty gallon sizes and applies

the heat to the outside of the tank, and the second is made in forty, sixty-six, and one hundred and twenty gallon sizes and larger for special jobs. It is internally heated, the products of combustion passing through a return tube extending the full length of the tank. The heaters are controlled by thermostat and are installed anywhere gas is used for other purposes. The rate is $2.50 per month for 6 cubic feet per hour demand or less and 50 cents per month for each additional cubic foot of hourly demand. About 300 of these heaters are now on the lines about equally divided between old and new customers.

A. H. Sikes, manager of the Great Falls Gas Company, Great Falls, Montana, told of the serious competitive conditions existing in Montana two years ago and what has been done about it. In spite of the fact that electric appliances are sold at invoiced cost and new buildings wired free, more electric ranges were replaced by gas in 1926 than were sold and only six have been sold so far this year as against 55 gas ranges in April alone. For every new house built the gas company provides a report in book form showing gas lines, and a complete line of appliances, together with an estimate and sales letter. This is given to the woman who is to occupy the house and is so nicely prepared that she is compelled to keep and study it. Mr. Sikes then went on to describe the advertising and sales methods employed. For this the reader is referred to an article by Paul W. Ernst in *Western Gas* for March, 1927.



A. H. Sikes

A. W. Schriber of the Utah Gas & Coke Company commented briefly on the situation in Salt Lake City. The average electric rate is 3 cents per kwhr and gas for domestic use ranges from $1.75 to 65 cents per mcf. Bituminous coal sells for $4.50 a ton and about half of the business in the city goes to coal. The apartment house business is going largely to the electric range due to the influence of electric refrigeration which is sold on the same meter. There are 321 apartment houses in Salt Lake City containing over 4000 apartments. The gas company has 307 of them at present the balance having gone electric in the past two years. The electric company spends ten times as much as the gas company for new business. The gas company has a 55 cent heating rate with $2 per hundred cubic feet of demand and a dollar customer charge. The rate applies to all gas used on the premises and is getting business. Gas fuel is needed to do away with the bad smoke condition which exists in the winter.

There Is The Right Thing At The Right Time

20% Off On April Gas Piping

And, according to Roger W. Babson, "the growth of gas is due to its economies and advantages over other forms of heat." Because of the efficient extraction of heat from coal, gas easily outranks all other known fuels for heating.

With this proven fact in mind, is it strange that this clean, convenient and controlable fuel is used for cooking by 11,000,000 housewives?

"YOU CAN DO IT BETTER WITH GAS"

GREAT FALLS GAS SERVICE

Tribune of Shelby Print

By keeping everlastingly at its selling job the Great Falls Gas Company is giving electricity a proper beating. Typical Great Falls advertising is shown above

The second day of the Conference was opened by a discussion of industrial gas sales by Jas. J. Ferrari, superintendent of the Puget Sound Power and Light Company, Bellingham. Mr. Ferrari commented upon the immense literature that is being developed on this subject but said that industrial gas required most intensive selling in the Pacific Northwest due to competition from other cheap fuels. Nevertheless it is good business as it has splendid advertising value and if successfully applied, one job will sell another due to discussion at trade association meetings. Mr. Ferrari advocated frequent visits by the service man to all industrial jobs with a view to improving service and extending it. He advised each company to make an industrial survey and keep it up to date and in addition to use what gas equipment it can in its own operations. As an aid to the extension of knowledge regarding industrial installations, Mr. Ferrari advocated more frequent meetings of the salesmen of Northwest companies through the formation of an Northwest Sales Conference of the Pacific Coast Gas Association. This idea has excellent possibilities and an attempt will be made to sell it to the executives of companies in Washington and Oregon.

J. H. Gumz (San Francisco) commented upon the industrial gas business of the Pacific Gas & Electric Company. Out of 400,000 gas consumers, about 7,200 are classified as industrial. These use about 20 per cent of the gas sold and their consumption is increasing at about 20 per cent a year. It would be impractical to maintain a sales force to call on 7,000 customers with any degree of regularity. A survey has been made but it was found impractical to make good use of it before it was out of date. The present practice is to take care of prospects as they come up or to work on one class of business at a time. The trial installation method of selling is meeting with success, the job being put in on a 90 day approval, the only obligation of the customer being to pay for the gas used. Mr. Gumz then described some specific installations which were converted to gas in spite of the fact that on a direct B.t.u. comparison it was several times more expensive than oil.

The balance of the time was taken up with a discussion of recent legislation and reports of sections. B. H. Kizer of Spokane discussed legislation in Washington; Geo. L. Myers, Oregon; A. H. Sikes, Montana; and O. L. Moore read a statement from Allen L. Cleveland of California. These discussions will appear as a part of the Annual Convention report.

Chairman E. N. Simmons reported for the Accounting section, Chairman R. M. McCalley for the Technical section, and O. L. Moore for the Public Relations section, whose chairman, Mr. D. L. Scott, was unable to attend the Conference. The Secretary said that the program of the Conference had been so predominately Commercial that no report would be made by the Commercial Section although it was doing some very important work.

EDITORIAL

Uniting for More Effective Work

LAST month brought an announcement to the gas industry that is of first importance. As reported elsewhere in this issue, the work of the American Gas Association and Natural Gas Association of America committees on the affiliation of the two organizations is to all intents and purposes successfully terminated. The Natural Gas Association, assembled in its twenty-second convention, at Cincinnati, on May 10 accepted the report of the committees, and authorized its newly elected officers to proceed with the details of converting the Natural Gas Association into the Natural Gas Department of the American Gas Association. This is provisional upon the acceptance of the report by the executive board of the American Gas Association, but that is regarded as a formality only, unanimously favorable action being expected of the A. G. A. board in its June 3 and 4 meeting at Atlantic City.

Nothing but good can be looked for from this logical development, which enables the gas industry to speak with one voice. Essentially the problems of natural and manufactured gas utilities are the same, and the new line-up will do away with considerable duplication of work and enable more gas men to share in benefits coming from the big research tasks now under way in the industry's association work. Organized as a separate department the natural gas branch can handle its special problems as adequately as before, and the whole industry's research program should be able to assume an even more ambitious form, with the added financial support of more company and individual members united under the American Gas Association banner.

More Consumer Advertising Needed

RUNNING through the advertising pages of current periodicals of general circulation, the gas man cannot escape the conclusion that his competitors are "out after him"—and in a good many cases out in front of him. A national advertising campaign is now under way for oil heating of residences; the advertising activities of electric refrigerator manufacturers for the past several years is another case in point; even the coal burner has been dressed up for the public eye through automatic stoking devices, and is making its bid for business through the medium of printer's ink.

Why has the gas industry been so laggard about adapting this sales adjunct, advertising, to its needs? There are a few manufacturers telling their story to a general audience, but not many. But the gas industry, which will grow or even continue to exist only as gas appliances are sold, cannot be limited by the conditions which affect its manufacturers. Consumer advertising, by the industry, may be the answer. We have made the start in collectively advertising gas to industry already; yet domestic sales are even more basic. Why should they not be aggressively supported by advertising to the domestic gas user and the new prospect? No one gas company can do it on the scale that it should be done.

Gas in the Ceramic Industry

BEGINNING with the publication of an article on gas in cement making, in the April, 1927 issue of *Western Gas,* we are offering our readers a series of discussions on the application of gas to the needs of the ceramic industry. Lee Holtz, assistant superintendent of distribution for the Southern California Gas Company, is writing this series of articles from a background of year-round service to large consumers in this field. Gas distributed to this class of consumers last year by the Southern California Gas Company reached the stupendous total of 18,000,000,000 cubic feet.

This month appears the installment on the use of gas in firing building brick. On alternate months other articles will be published on the following subjects included in the wide field of ceramics: Tiles and Terra Cotta; Vitrous Ware, with special reference to sanitary ware and dishes; Refractories—fire brick, high temperature ware; Glass Manufacture—bottles, technical ware, and window glass.

While Mr. Holtz' treatment of these subjects will be sufficiently broad to suggest general processes of manufacture, the chief emphasis will go to the factors connected with the efficient use of gas in the various kinds of ceramic plants. Industrial gas men will follow this series with much interest, and will find much of the content that may be applied to their own industrial sales problems.

BUILD NEW GENERATING UNIT AT PORTLAND GAS AND COKE

THE Portland Gas & Coke Company has under construction at its plant a new generating unit. This consists of one unit of a new generator building capable of housing four 5 million cubic foot generators, one generator, scrubber and connections and a concrete tar box with a waste heat boiler foundation in connection.

The generator, which is the 13th to be built at this plant, is double the size of previous units, having a capacity of five million cubic feet per 24 hour period. The general dimensions are, diameter 27 feet, height 45 feet above the foundation, with a stack opening of 8 feet 2 inches, and two blast inlets each 30 inches in diameter.

There will be used in the construction of the generator 160,000 lbs. of steel, 10,000 lbs. of castings and 6,000 lbs. of valves. The brick work necessary to line and checker the machine will weigh 860 tons, comprising 17,000 cubic feet of solid brick work.

The scrubber is of the cone type, 15 feet in diameter and 45 feet high, and contains 62,000 lbs. of steel and 2,200 lbs. of castings.

In connection with this unit a primary tar box constructed of concrete, 64 feet long, 16½ feet wide and 10 feet deep is being installed.

It is intended to use a waste heat boiler with this machine in the future, and the building and connections are so designed; this requires installing foundations for the boiler before placing the tar boxes.

The operating costs will be materially reduced as one man can operate two machines, with the interlocking board control which will reduce the labor cost one-half. Other operating economies will be made due to the size of the installation.

The erection was started about April 15 and the steel work is scheduled for completion July 1.

PROVO RATES TO BE REDUCED

Utah Valley Gas and Coke Company, serving Provo, Utah, on May 20 filed application with the state utilities comission for permission to revise its rate schedules. For the most part the revision asked for is downward, according to Walter Adams, local manager of the utility, particular reductions being made to users of large quantities. The hearing was presided over by Elmer E. Corfman, chairman of the Utah commission, and no protests were entered.

TO REPAIR CHEYENNE MAINS

Cheyenne Light, Fuel & Power Company, subsidiary of the Public Service Company of Colorado, plans to spend approximately $50,000 this summer in repairing its distribution system. Natural gas from the Wellington Dome fields near Ft. Collins is now being distributed in Cheyenne, and as this gas is dry, it is necessary to replace the oakum caulked joints used with the moisture-laden artificial gas formerly served. Rubber rings are to be clamped around each joint.

UTILITIES POWER AND LIGHT CONTROLS ST. LOUIS COMPANIES

Control of the stock of the Laclede Gas & Electric Company, St. Louis, Mo., and of the St. Louis Coke & Iron Company has been secured by the Utilities Power and Light Corporation of Chicago. The chief subsidiary of the Laclede Gas & Electric Company is the Laclede Gas Light Company, valued at more than $50,000,000. As a result of the acquisition of the St. Louis Coke & Iron manufacturing enterprise, which is valued at about $10,000,000, by product gas will be distributed in the Laclede system.

W. C. HORNBERGER NAMED HEAD OF ARIZONA UTILITIES ASSN.

AT ITS annual convention at Flagstaff, May 26 and 27, attended by a number of Pacific Coast Gas Association representatives, the Arizona Utilities Association elected W. C. Hornberger of Phoenix president for the coming year. M. A. Pooler, Tucson, was chosen as first vice-president; and L. V. Sears, Prescott, second vice-president. Directors for the new year are I. A. Rosok, Bisbee; W. B. Lewis, Globe; and R. W. Wilde, Kingman.

The 1928 convention will be held at Prescott.

The view above is taken at the entrance to the Ice Caves, near Flagstaff, Arizona, and shows several Pacific Coast gas men doing the sights while attending the Arizona Utilities Association sessions. Left to right the men are: D. H. Perkins, superintendent of gas distribution, San Diego Consolidated Gas and Electric Company; C. R. Baxter, manager of the E. A. Key Company, Los Angeles; Norman R. McKee, purchasing agent for the Southern Counties Gas Company, Los Angeles; and E. W. Langdon, branch manager of the Sprague Meter Co., Los Angeles, Calif.

FURNACE ASSOCIATION STARTS TESTING LABORATORY IN L. A.

Through the courtesy of the Los Angeles Gas & Electric Corporation the Gas Furnace Association of Southern California has set up a laboratory at the Macy Street plant of the gas company, for testing of gas furnaces. According to Geo. Finney, secretary of the furnace association, members' furnaces are going through the test procedure in rotation, preparatory to sending them back to Cleveland for the A. G. A. Laboratory test. Adequate apparatus has been installed for the work of testing, which is in charge of Brandon Finney.

As soon as the furnace lines of association members have been tested the laboratory's services will be available to non-members on payment of a small laboratory fee.

GRANTS PASS PLANT IMPROVED

The Grants Pass, Oregon, plant of the Southern Oregon Gas Company has undergone some extensive improvements in the past few months. A new generator and compressor tank have been installed, among other items. According to Roy E. Johnson, manager of the utility there will be several extensions of mains made in the community this summer.

PHILLIPS PETROLEUM TAKES OVER OKLAHOMA NATURAL

OKLAHOMA Natural Gas Corporation, one of the pioneer gas companies in Oklahoma with over 1900 miles of pipe lines, has been purchased by the Phillips Petroleum Company it was announced May 23. The major portions of the outstanding stock of the Oklahoma Natural have changed hands, and the properties are to be taken over immediately. Headquarters of Oklahoma Natural are at Tulsa, and the utility supplies natural gas to 50 of the principal towns in the central and southern part of the state, including Oklahoma City, Tulsa, Muskogee, Okmulgee, Shawnee, El Reno, Guthrie, etc., and the principal industries of the state.

There will be no changes in the company's management except the Phillips directors will constitute the majority of the board with Frank Phillips as chairman. R. C. Sharp of Tulsa will continue as president and general manager and L. C. Ritts as vice president and treasurer. All department heads will be retained with headquarters at Tulsa, Okla. It is the intention to connect the present system with the Amarillo, Texas field by laying over 200 miles of 22-inch pipe lines which will insure to Oklahoma a more stable and permanent supply of gas for the future. Phillips Petroleum Company is already one of the largest producers and suppliers of natural gas in the United States, having large reserves throughout Oklahoma and in the Amarillo and northern Texas field, and through this new affiliation it is placed in the retail gas business in a large way. It is anticipated that the purchase of the Oklahoma Natural will eventually give Phillips Petroleum a larger outlet for its natural gas.

COLORADO GOVERNOR APPOINTS TO GAS CONSERVATION BOARD

Governor Adams of Colorado has named on the new gas conservation board authorized at the last session of the state legislature, Fred W. Freeman, president of the Texas Production Company (subsidiary of the Texas Corp.); S. H. Keoughan, president of the Continental Oil Company; and C. H. Sherman, Rocky Mountain district manager of the Union Oil Company of Calif. This is the first regulation of the oil industry in Colorado. The law goes into effect July 12th and empowers the board to prevent the avoidable waste of natural gas; requires taking out permits for the drilling of oil or gas wells, and for abandoning same, payment of fees for permits; and authorizes the making of rules and regulations.

ATHLETIC FIELD FOR L. A. G. & E. EMPLOYEES' ASSOCIATION

Los Angeles Gas and Electric Corporation has recently set aside grounds for an employee association athletic field, located back of the Alameda Street electric station, Los Angeles. Locker rooms, showers, and bleachers are to be erected.

GRANADA IS LATEST TOWN ON SOUTHERN CAL. GAS CO. LINES

The community of Granada, near Van Nuys, Calif., was added to the system of the Southern California Gas Company in May, four and one half miles of distribution main being laid to the new territory.

FIRST PRODUCTION MEET

Sponsored by the Carbonization and Water Gas Committee of the American Gas Association there is being held the first annual A. G. A. production conference, May 31 and June 1, at Detroit, Mich.

Interior of new Santa Cruz office of Coast Counties Gas and Electric Co.

Coast Counties Gas *and* Electric Opens New Offices

NEW and beautiful offices for the Santa Cruz headquarters of the Coast Counties Gas and Electric Co. have recently been completed at 175 Pacific Avenue. The address is the same as it has been for a number of years, only the surroundings are new. The combined office and display room is a commodious and practical room, yet the scheme of the interior has been worked out in a manner that would do credit to a fine home. Italian style of architecture has been followed out, with heavily beamed ceilings, and tiffany finished walls. The entire ceiling is an amber-colored skylight, of cathedral glass. A large ten-by-twenty foot display window occupies the entire front of the office, and from here the message of good gas appliances and proper lighting is silently but forcefully being spread to the citizens of Santa Cruz.

Coast Counties Gas and Electric Company has recently built an office in Pittsburgh, Calif., along the same line as that followed in the new Santa Cruz building. Also, on May 15 the company branch at Gilroy moved into a new office which is practically a duplicate of that at Santa Cruz.

GAS COMPATY PREPARES FOR HIGH WATER IN PORTLAND

Some concern is being felt in Portland, Oregon, that the annual spring freshet of the Columbia and Willamette Rivers may be unusually high this year and cause considerable damage. The Portland Gas & Coke Company is making all necessary preparations for a stage of 30 feet or more, although the river does not usually go above 25 feet. The United States Government reports very heavy snow deposits in the watershed of both rivers and the late spring has caused less of the snow to melt than usual.

A flood stage of 35 feet would bring the water above the main yard level of the Portland Company and would involve extensive preparations in the way of providing pumps for basements, closing up door and window openings, etc. The electrical system is proof against trouble as all cables are lead covered and with the exception of a few motors the equipment is well above any probable stage of the water.

PROPOSAL TO SERVE OKLAHOMA TOWNS SUBMITTED

Walter H. Gant of Oklahoma City, and others associated with him, have submitted a proposal to serve Purcell, Pauls Valley, Davis, and Sulphur communities of Oklahoma with natural gas. The proposition is contingent upon 2000 customers being secured from the four communities.

MOELLER OFF FOR SOUTH SEAS

William Moeller, Jr., general manager of the Midway Gas Company, leaves Los Angeles on June 2 for a two-month vacation in the South Seas.

GAS USE IN SALT LAKE CITY

Of the estimated 28,000 homes in Salt Lake City, Utah, 19,000 are on the lines of the Utah Gas & Coke Company, and the average number of new meters connected has totalled 132 a month for the last two years.

McKAY TALKS TO OKLAHOMA NEWSPAPERMEN

Edward F. McKay, manager of the Oklahoma Utilities Association, Oklahoma City, gave an address on "What We See in the Newspapers," before the Oklahoma Press Association Convention at Poteau, Okla., on May 6. Mr. McKay took occasion to point out the benefits possible through co-operation between business interests and the press.

BASSETT MADE SUPT. OF UNION NATURAL GAS CO., CHATHAM

T. E. Bassett, manager of the Petrolia Utilities Co. at Petrolia, Ontario, for the past eight years, has been transferred to Chatham, Ont., where he becomes local superintendent of the Union Natural Gas Co. M. W. Moss, of Sarnia, Ont., has been appointed manager of the Petrolia system.

EMPIRE BUILDING COMPRESSOR STATION IN KANSAS

The Empire Gas & Fuel Company is constructing a new natural gas compressor station in the North Winfield district to be located in the northeast of Section 22-32-4, Cowley County, Kansas. This installation will consist of 170 horsepower single acting twin Cooper compressor machines, and the necessary auxiliary equipment. It is expected that the plant will be in operation early in June.

DENY APPLICATION OF SOUTH COAST GAS COMPANY

The application of the South Coast Gas Company to construct an artificial gas plant in Oceanside, and to issue $100,000 in common stock and $85,000 in seven per cent cumulative preferred stock has been denied by the California Railroad Commission. The commission, after investigation by its engineers, decided that the project would not require the amount of securities applied for.

P. C. G. A. WORKER MARRIED

Mrs. Florence M. Hughes, secretary to Clifford Johnstone, Executive Secretary of the Pacific Coast Gas Association, on June 1 was married to F. A. Lavigne, sales engineer with the Westinghouse Company. The Lavignes left immediately for a two months' tour of Europe.

BISMARCK UTILITY INSTALLS NEW WATER GAS SET

A new six-foot water gas machine is to be installed by the Consolidated Utilities Company in its Bismarck, N. D. plant.

CUSTOMER OWNERSHIP DRIVE

Cities Service properties conducted another customer ownership campaign from May 14 to 25, offering preferred stock of Cities Service Company to old and new customer owners.

SOUTHWEST PUBLIC SERVICE ASSOCIATION ELECTS

At its April 26-29 convention the Southwestern Public Service Association elected the following officers: President, M. T. Walker, Shreveport, La.; vice-presidents, A. B. Patterson, New Orleans; C. N. Thompson, Waco, Texas; G. F. Cherry, Weatherford, Texas; treasurer, R. S. Soper, Dallas, Texas. E. N. Willis of Dallas, Texas, is secretary, having served in that capacity for several years.

OFFICE FOR EMPIRE G. & F. IN FORT WORTH; HOFFMAN MANAGER

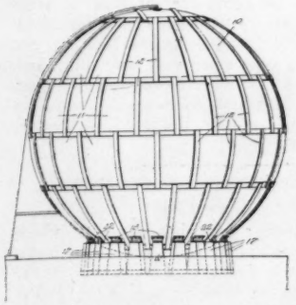
The Empire Gas & Fuel Company (Cities Service subsidiary) has opened a branch office in the W. T. Waggoner Bldg., Forth Worth, Texas, with C. C. Hoffman in charge. For several years the Empire Company has had extensive holdings in north and west Texas, and it is understood to be contemplating considerable expansion in this territory.

NEW MANAGER FOR P. O. & G. AT INDEPENDENCE, KANSAS

R. F. Hinchey has resigned as manager of the Oklahoma Natural Gas Corporation, Okmulgee, Okla., to take up new duties as gas engineer of the Prairie Oil & Gas Company at Independence, Kansas. Mr. Hinchey became manager of the Okmulgee Gas Company three years ago, the utility being subsequently purchased by the Oklahoma Natural Gas Corporation.

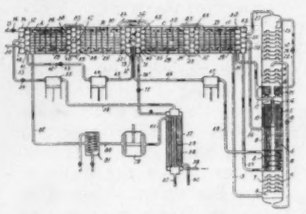
THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

1,621,929. GAS HOLDER. GEORGE T. HORTON, Chicago, Ill. Filed Sept. 18, 1925. Serial No. 57,084. 8 Claims. (Cl. 220—1.)



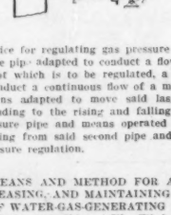
5. A gas holder comprising a substantially spherical shell substantially supported by supporting legs resting on foundations and attached at their upper ends to the shell on the line of a circle lying in a horizontal plane and having a diameter substantially less than the diameter of a great circle of said shell.

1,619,169. APPARATUS FOR SEPARATING THE CONSTITUENTS OF GASEOUS MIXTURES. CLAUDE C. VAN NUYS, Cranford, N. J., assignor to Air Reduction Company, Incorporated, New York, N. Y., a Corporation of New York. Original application filed Sept. 9, 1920, Serial No. 409,096. Divided and this application filed Dec. 6, 1924. Serial No. 754,281. 4 Claims. (Cl. 62—123.)



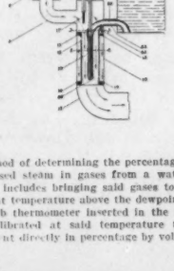
1. In an apparatus for separating the constituents of a gaseous mixture by liquefaction, the combination of a column having a plurality of tubes for the passage of the mixture, a chamber surrounding the tubes to receive liquid, a head in which the tubes terminate, means for withdrawing residual unliquefied gas from the head, means for non-selectively liquefying a regulated portion of the residual gas thus withdrawn, means for diverting the remainder of the residual gas from the liquefying means, a rectifying compartment and means for delivering liquid produced in the tubes and the liquefied residual gas to the rectifying compartment.

1,620,707. DEVICE FOR REGULATING GAS PRESSURE. GUIDO WUNSCH, Steglitz, near Berlin, Germany. Original application filed Feb. 29, 1924, Serial No. 696,103, and in Germany Mar. 7, 1923. Divided and this application filed Feb. 20, 1925. Serial No. 10,717. 4 Claims. (Cl. 137—78.)



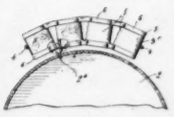
1. In a device for regulating gas pressure in combination a pressure pipe adapted to conduct a flow of the gas the pressure of which is to be regulated, a second pipe adapted to conduct a continuous flow of a medium under pressure, means adapted to move said last mentioned pipe corresponding to the rising and falling pressure in the said pressure pipe and means operated by the said medium escaping from said second pipe and adapted to effect the pressure regulation.

1,620,864. MEANS AND METHOD FOR ASCERTAINING, INCREASING, AND MAINTAINING THE EFFICIENCY OF WATER-GAS-GENERATING MACHINES. MATTHEW E. BENESH, Chicago, Ill. Filed July 8, 1921. Serial No. 483,122. 4 Claims. (Cl. 73—51.)



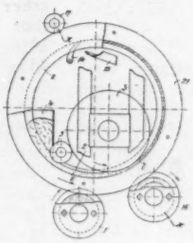
1. The method of determining the percentage by volume of undecomposed steam in gases from a water gas generator which includes bringing said gases to a predetermined constant temperature above the dewpoint and reading a wet bulb thermometer inserted in the flow of said gases and calibrated at said temperature to read the moisture content directly in percentage by volume.

1,621,492. INDICATOR FOR LEAKING AIR, GASES, AND THE LIKE. ERNEST M. CATTLEY, New York, N. Y. Filed Apr. 25, 1925. Serial No. 25,811. 3 Claims. (Cl. 73—51.)



1. An indicator of the character described comprising a series of spaced separate hollow transparent cylinders arranged radially in a circularly disposed row and each having its end extending towards the center of the series open at that part adapted to be placed adjacent a tube, a curved frame comprising strips extending along opposite ends of the cylinders, the inner strip having spaced openings registering with the said open ends of the cylinders, the outer strip closing the outer ends of said cylinders, and agitatable members within said cylinders.

1,620,621. PRESS FOR MAKING BRIQUETTES. HUGO APPELBECK, Falkenau, Czechoslovakia. Filed Oct. 8, 1926, Serial No. 140,308, and in Germany Jan. 21, 1924. 6 Claims. (Cl. 25—21.)

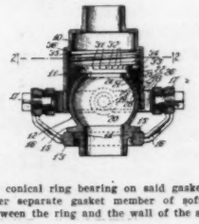


2. A briquetting press, comprising a revoluble ring embodying two coordinate annular sections arranged face to face and conjointly providing between the adjacent inner faces of their rim portions an annular compression groove; means for feeding material to the groove; a rotary compressing disc mounted within and eccentrically of said ring and projecting conformably into said groove; and means for automatically moving the ring sections laterally away from and toward each other at certain points in the rotary travel of the ring.

3. A briquetting press, comprising a revoluble ring embodying two coordinate annular sections arranged face to face and conjointly providing between the adjacent inner faces of their rim portions an annular compression groove; means for feeding material to the groove; a rotary compressing disc mounted within and eccentrically of said ring and projecting conformably into said groove; and a roller engaging the periphery of the ring and having a circumferential collar of wedge-section which is adapted to project between the said adjacent faces of the ring sections to force the latter apart.

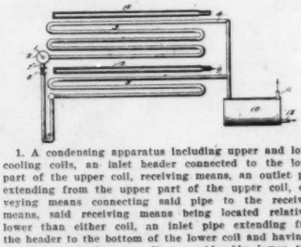
1,617,589. FLEXIBLE PIPE CONNECTION. EGBERT H. GOLD, Chicago, Ill. Original aplication filed Oct. 11, 1924, Serial No. 743,091. Divided and this application filed June 20, 1925. Serial No. 38,465. 22 Claims. (Cl. 285—93.)

1. A flexible pipe connection, comprising an interiorly cylindrical socket, a ball projecting within but not in contact with the wall thereof, connecting means between the ball and socket preventing disengagement but allowing universal relative angular movements thereof, a gasket member slidable in the cylindrical recess and having a curved face bearing against the inner portion of



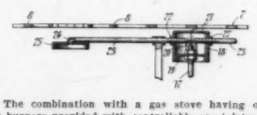
the ball, a conical ring bearing on said gasket member, and another separate gasket member of soft material pressed between the ring and the wall of the socket.

1,622,024. APPARATUS FOR COOLING AND CONDENSATION. VERNON C. CANTER, Charleston, W. Va., assignor to Gasoline Recovery Corporation, a Corporation of Delaware. Filed May 2, 1924. Serial No. 710,667. 3 Claims. (Cl. 257—35.)



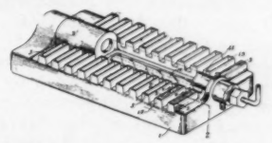
1. A condensing apparatus including upper and lower cooling coils, an inlet header connected to the lower part of the upper coil, receiving means, an outlet pipe extending from the upper part of the upper coil, conveying means connecting said pipe to the receiving means, said receiving means being located relatively lower than either coil, an inlet pipe extending from the header to the bottom of the lower coil and having a liquid trap section extending considerably lower than the bottom of the lower coil, an outlet pipe extending from the top of the lower coil into the conveying means, means for causing a liquid cooling agent to be sprayed over the upper coil, and other means for causing a liquid cooling agent to be sprayed over the lower coil.

1,618,979. SAFETY LIGHTER FOR GAS STOVES. WILLIAM F. DESTER, Newark, N. J., assignor to U. S. Tool Co., Inc., East Orange, N. J., a Corporation of New Jersey. Filed July 11, 1925. Serial No. 42,871. 2 Claims. (Cl. 158—115.)



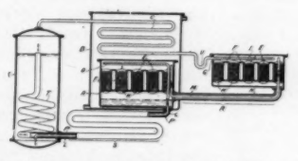
2. The combination with a gas stove having one or more burners provided with controllable gas inlets, and a cover having a substantially circular opening over each burner, said burner having vertical discharge openings and imperforate side walls of a pilot casing containing a constantly lit gas jet, an inverted shallow cylindrical cup over each of said burners, and a hollow connection between said pilot casing and inverted cup.

1,617,744. BURNER. FRED N. BIENCE, Cincinnati, Ohio. Filed Nov. 22, 1922. Serial No. 602,643. 1 Claim. (Cl. 158—85.)



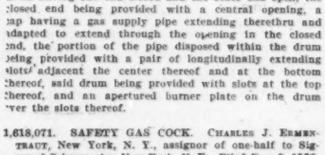
In a gas burner, a casing having a gas and air mixing chamber, a plurality of spaced apart extended outlets projecting outwardly therefrom and arranged in rows, a gas generator disposed between said rows, and a removable baffle mounted in each of said extended gas outlets and reduced on its sides and ends between its corners to form gas passages between the walls of said gas outlets and said baffle, substantially as set forth and for the purposes specified.

1,620,843. ABSORPTION REFRIGERATING APPARATUS. BALTHAR CARL VON PLATEN, Ystad, and CARL GEORG MUNTERS, Dalajarna, Sweden, assignors, by mesne assignments, to Electrolux Servel Corporation, a Corporation of Delaware. Filed Aug. 4, 1923, Serial No. 655,768, and in Sweden Aug. 18, 1922. 10 Claims. (Cl. 62—119.)



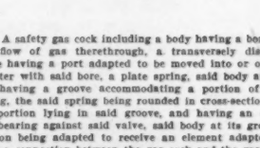
1. Refrigerating apparatus comprising a generator, a condenser, an evaporator, an absorber, means to interconnect the generator, condenser, evaporator and absorber to maintain the same total pressure therein, said means including a liquid seal interposed between the condenser and evaporator.

1,610,542. GAS BURNER. ALVA RAYMOND WILSON, Moline, Kans. Filed Apr. 27, 1926. Serial No. 104,961. 3 Claims. (Cl. 158—99.)



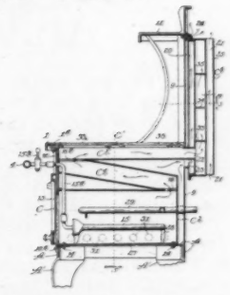
1. A gas burner of the class described including a drum having one end closed and the other end open, the closed end being provided with a central opening, a cap having a gas supply pipe extending therethru and adapted to extend through the opening in the closed end, the portion of the pipe disposed within the drum being provided with a pair of longitudinally extending slots adjacent the center thereof and at the bottom thereof, said drum being provided with slots at the top thereof, and an apertured burner plate on the drum over the slots thereof.

1,618,071. SAFETY GAS COCK. CHARLES J. ERMENTRAUT, New York, N. Y., assignor of one-half to Sigmund Schneeweiss, New York, N. Y. Filed Dec. 8, 1926. Serial No. 153,398. 2 Claims. (Cl. 284—13.)



1. A safety gas cock including a body having a bore for the flow of gas therethrough, a transversely disposed valve having a port adapted to be moved into or out of register with said bore, a plate spring, said body at one end having a groove accommodating a portion of said spring, the said spring being rounded in cross-section for the portion lying in said groove, and having an offset end bearing against said valve, said body at its grooved portion being adapted to receive an element adapted to form a connection between the gas cock and the gas hose leading to the point of discharge of the gas, said element fitting an end of said gas cock and adapted to engage said spring to depress the same within the groove of the body and thereby cause the offset portion to exert pressure against said valve, and a spring beneath said valve and tending to move the valve automatically to the closed position with its port out of register with the bore of the body whenever said element is detached from the gas cock and the pressure of said element removed from said first mentioned spring.

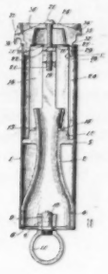
1,621,141. STOVE OR RANGE. JOHN J. TOOMEY, Chicago, Ill. Filed Apr. 30, 1925. Serial No. 26,894. 46 Claims. (Cl. 126—39.)



16. A range comprising a cooking-top having a closed top section, a gas-flue disposed below the closed top, a burner-box spaced some distance below said gas-flue, a flue leading from the rear portion of said burner-box to the front portion of said first-named flue, and a gas-burner located in said burner-box.

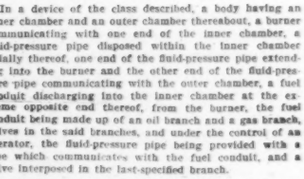
1,620,071. GAS BURNER. CHARLES C. CHAPPELLE, New York, N. Y. Filed May 31, 1924. Serial No. 716,874. 9 Claims. (Cl. 158—112.)

1. In a gas burner, the combination of a tubular body portion, a Venturi mixing tube extending part way into said body portion, a flame check screen having an unobstructed portion extending below the upper end of the mixing tube, an extension projecting upwardly from the mixing tube, and a burner head removably anchored to said extension in position on the outlet end of said body portion and adapted to enclose the upper end of



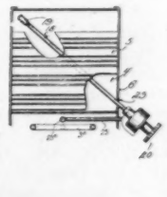
said flame check screen and removably hold the same in position, said burner head being provided with an annular skirt extending into said body portion and spaced apart therefrom to provide arcuate ports for the insuance of combustible mixture from said body portion.

1,617,327. OIL AND GAS BURNER. HOLLIS DOYLE EWING, Shreveport, La. Filed Mar. 23, 1926. Serial No. 96,809. 1 Claim. (Cl. 158—11.)



In a device of the class described, a body having an inner chamber and an outer chamber thereabout, a burner communicating with one end of the inner chamber, a fluid-pressure pipe disposed within the inner chamber axially thereof, one end of the fluid-pressure pipe extending into the burner and the other end of the fluid-pressure pipe communicating with the outer chamber, a fuel conduit discharging into the inner chamber at the extreme opposite end thereof, from the burner, the fuel conduit being made up of an oil branch and a gas branch, valves in the said branches, and under the control of an operator, the fluid-pressure pipe being provided with a pipe which communicates with the fuel conduit, and a valve interposed in the last-specified branch.

1,619,505. THERMOSTATIC CONTROL FOR OVENS. FRANK A. GAUGER, Milwaukee, Wis., assignor to Time-O-Stat Corporation, Milwaukee, Wis., a Corporation of Wisconsin. Filed Dec. 22, 1924. Serial No. 757,445. 16 Claims. (Cl. 126—39.)



1. In a gas range, the combination of a burner supply header, an oven located adjacent said header, a burner for said oven, and a thermostatic control unit for the oven burner, said unit being directly attached to said header and extending diagonally into said oven and positioned closely adjacent a vertical wall thereof.

Natural Gas Ass'n *of* America Votes *for* Affiliation *with* A. G. A.

SOME time ago two committees were appointed, one from the American Gas Association, and one from the Natural Gas Association of America, to report on the desirability of merging the two organizations under one head. The report of this combined committee, recommending the action and outlining terms on which it might be consummated, was submitted at the 22nd annual convention of the Natural Gas Association at Cincinnati, Ohio, and on May 10 was formally adopted. The executive board of the American Gas Association in its June 3 and 4 meeting at Atlantic City, is expected to give unanmious ratification to the merger.

By this development, under which the Natural Gas Association becomes the Natural Gas Department of the A. G. A., all national association work is brought under one head. Many advantages are seen in the new arrangement, in that it will now be possible for both associations, without duplication, to concentrate upon such common problems of the industry as are represented in the A. G. A. $500,000 utilization research program, the A. G. A. Laboratory, and the recently begun research of the A. G. A. technical section in the mixing of gases. Both manufactured and natural gas members will share in the benefits of these activities, and there are other common problems, such as the study of rate structures and distribution practices, in which both associations have been active.

BASIS OF AFFILIATION

The Natural Gas Association committee on affiliation with the American Gas Association was made up of H. C. Cooper, Raymond Cross, R. W. Gallagher, and A. W. Robertson. A. G. A. committeemen were Harry C. Abell, George N. Whitwell, and Clare N. Stannard. The recommendations of these committees, resulting from their joint sessions, which serve as the basis for the amalgamation of the two associations and set up general provisions for the conduct of natural gas activities in the combined association, are as follows:

1.—That there be organized a Natural Gas Department of the American Gas Association, to have jurisdiction over all matters relating to the production, distribution, utilization and sale of natural gas.

2.—That the Constitution of the American Gas Association be amended to provide for natural gas representation on the Board in the approximate proportion that natural gas dues bear to the total dues paid to the Association by gas company members.

3.—The Natural Gas Department shall elect its own Chairman and Vice Chairman, and the Chairman so elected shall be a Vice President of the Association and as such, a member of the Executive Board, it being understood that, if the amalgamation of the two Associations is completed during the coming year, the then President of the Natural Gas Association shall become Chairman of the Natural Gas Department of the American Gas Association, and the then Vice President of the Natural Gas Association, shall become Vice Chairman of the Natural Gas Department of the American Gas Association, and that the then Board of Directors of the Natural Gas Association shall become the Managing Committee of the Natural Gas Department of the American Gas Association and shall continue in these capacities until the next following election by the Natural Gas Department.

4.—The Natural Gas Department shall have a Secretary as a member of the staff of the American Gas Association and also such asistance as may be authorized; the Secretary and Assistants to be selected by the Managing Director of the American Gas Association with the approval of the Managing Committee of the Natural Gas Department.

5.—The annual meeting of the Natural Gas Department shall be held at the same time and place as the annual convention of the American Gas Association.

6.—The Natural Gas Department may hold such additional meetings as may be determined upon by its Chairman and Managing Committee and at such times and places as they may elect.

7.—Natural Gas Companies shall pay dues upon the basis of $25.00 per annum base fee, plus one-fortieth (1/40) of 1 per cent of annual gross revenue from the sale of natural gas. The purchase cost of gas shall be deducted from gross earnings whenever there would otherwise result duplication of dues through sales of one company to another.

8.—The Natural Gas Department to have its own representation at National or State Government hearings on conservation, natural gas production, or oil production where the natural gas interest is involved.

9.—Upon ratification of this agreement by both Associations, Natural Gas Companies, members of the Natural Gas Association of America, shall become Gas Company Members of the American Gas Association and, as such, entitled to all privileges of membership.

9a.—The individual members of the Natural Gas Association shall be transferred to membership in the American Gas Association. Upon the date of the first succeeding current year if the American Gas Association individual members will pay their dues directly to that association all funds will thereafter be the property of the American Gas Association.

The foregoing articles of this agreement cannot be changed except upon mutual consent of the parties.

10.—The Natural Gas Supply Men's Association to continue in its present form if desired, paying the cost of exhibitions and entertainments at meetings other than the annual convention of the American Gas Association. Manufacturers supplying the natural gas industry may join the American Gas Association on the same basis with all other manufacturer company members which membership shall entitle them to exhibit at the annual conventions of the American Gas Association with due representation on the Managing Committee and other Committees of the Manufacturers Section.

In the resolution adopting these recommendations the Natural Gas Association directed its incoming officers to complete the work of amalgamation and to surrender the association charter, surplus funds from the treasury to be used for such purposes as authorized by the newly created Natural Gas Department of the A. G. A.

N. G. A. DATES FROM 1906

The Natural Gas Association was organized in Pittsburgh in 1906, and has held annual conventions since that time. The organization's proceedings for 1925 give the membership as 100 company members and 1,800 individual members, all classes.

According to statistics made public by the Geological Survey for 1923, the latest available at A. G. A. Headquarters, the natural gas industry for that year produced in round figures one trillion cubic feet of gas. Three and one quarter million domestic customers consumed 278,000,000,000 cubic feet at an average price of 51.1 cents per thousand, and 730,000,000,000 cubic feet were consumed by about 18,000 industrial customers, including all users, at an average price of 13.4 cents per thousand.

ACTIVE WORK BEGUN ON BIG TEXAS LINE PROJECT

A giant trencher has been set to work about three miles south of Lubbock, Texas, digging the ditch for the $6,000,000 natural gas pipe line to be laid by the West Texas Public Service Corporation from the Panhandle Oil Fields to Lubbock, Slaton, Plainview, Lockney, Floydada, Hale Center, Abernathy, Tulia, Kress, Canyon, Happy and other points. The corporation has promised that gas will be available to consumers along the line before winter weather sets in. Max Cunningham, chief engineer with the Benham Engineering Co. of Chicago, Ill., is on the ground to supervise the work. A superintendent and foreman with Williams Brothers, Inc. of Tulsa, Okla., general pipe line contractors on the project, are also on hand assisting in the laying of the line. The Panhandle Construction Co. with head offices in Lubbock, Texas, has the subcontract on the line and will do the work south to Slaton. The line will be 16-inch from the wells to Amarillo, 14-inch to Plainview, 12-inch to Lubbock, and 8-inch to Slaton and out to Floydada. Pile line crews are working behind the trenching machine.

INDUSTRIAL GAS COURSE IN JUNE AT MASS. TECH.

Massachusetts Institute of Technology is offering the sixth annual industrial gas course, sponsored by the New England Gas Association and the American Gas Association, from June 13 to 24 at Cambridge, Mass.

42 MILES OF PIPE ORDERED FOR B. C. ELECTRIC

The British Columbia Electric Railway Company, of Vancouver and Victoria, B. C., has ordered 42 miles of main so far this year from England, for various extensions of its low and high pressure gas system.

SAN LOUIS VALLEY COMPANY ASKS PERMIT TO SERVE

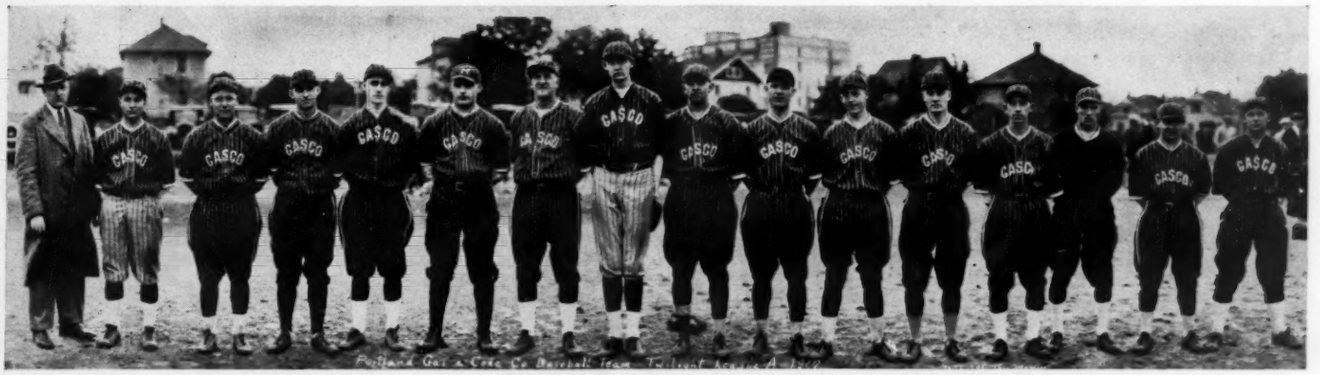
San Louis Valley Public Service Company, capitalized at $300,000, has applied to the Colorado public utilities commission to lay pipe lines to serve Alamosa and other cities of the vicinity.

START DEPARTMENT OF EFFICIENCY IN SO. CAL. SYSTEM

Southern California Gas Company has recently established a Department of Efficiency, under the direction of Karl Jorgensen, for the past three years efficiency engineer of the utility.

GEO FINNEY REPRESENTS GAS LINES IN SO. CALIFORNIA

George Finney has been appointed Southern California representative for the Arthur F. Erickson Company's line of electric Valves and Minneapolis Heat Regulators. Mr. Finney has also arranged to represent Barbor Burners in the same territory, his headquarters being in the Los Angeles Gas and Electric Corporation Building, Los Angeles. W. H. Bias, formerly at the Downey office of the Southern California Gas Company, is associated with Mr. Finney in a sales capacity.



INDUSTRIAL athletics in Portland has been encouraged among the larger firms. There are 52 teams in the Association this year, and the Portland Gas & Coke Company continues to lead the field of contenders.

The accompanying picture reflects the baseball aggregation carrying the banner for the northern utility in industrial athletics. The team has won its first three games this season, which makes a total of 78 games won, accompanied by five defeats within the last four years. The Gasco team has piled up a nice reserve of scores. In the last 29 games played, the Gas Company boys have chalked up 271 scores against the opponents' 65.

The Portland Gas & Coke Company also has teams in basketball, volley ball, horseshoes, tennis and golf. Their collection of trophies speaks well for their ability to hold their own in fast company.

Names, positions and departments of the players pictured above, from left to right, are as follows:

J. C. Ryan (Mgr.), utilization; A. Swengle (utility), distribution; P. S. Nonken (utility), utilization; F. La Mear (2nd base), utilization; W. R. Meisner (pitcher), sales department; E. L. Meisner (right field), utilization; W. H. Harmon (coach), supply bureau; V. J. Haggerty (pitcher), treasury; C. La Mear (catcher), utilization; J. Manning (1st base), office; H. C. Haight (shortstop), utilization; N. Stephens (center field), accounting; G. Zimmerman (third base), utilization; J. S. Harkins (pitcher), utilization; F. J. Harkins (left field), utilization, and J. B. Stewart (catcher), utilization.

GAS HEATERS SOLD IN B. C. ELECTRIC RAILWAY DRIVE

In the first ten days of a recent campaign for sale of automatic water heaters in Vancouver, B. C., the British Columbia Electric Railway Company sold heaters equal in number to 20 per cent of the entire 1926 automatic heater sales. A special offer of $10 down and eighteen monhts to pay the balance was made during the campaign.

VANCOUVER TOURIST HOTEL TO INSTALL GAS RANGES

The Liberty Hotel, 18th and Miller avenue, Vancouver, Washington, which was used by the U. S Government for housing shipyard workers, has been remodeled into two-room apartments by the present owner, and will be used as a tourist hotel. In order to make it an up-to-date tourist hostelry, an order has been placed with the Portland Gas & Coke Company for 25 smooth-top ranges, which have just been installed. Later in the summer 25 more of these ranges will be installed.

G. B. BUCK NOW NEW BUSINESS MANAGER AT DENVER

Gaylord B. Buck has been made new business manager of the Public Service Company of Colorado, in the place of C. A. Semrad. The latter is now general manager of the St. Joseph Railway, Light, Heat & Power Company. Mr. Buck has been with the Doherty organization since 1910, for the past three years in Denver as new business manager of the company's electric department.

GETTY COMPANY FORMED TO BUILD GASOLINE PLANT

The George F. Getty Gasoline Co., has been organized for the purpose of building an absorption plant in the Alamitos Heights area of the Seal Beach field. It will have a daily capacity of five to six thousand gallons of gasoline and will run probably 10,000 cubic feet of gas daily.

GASOLINE PLANT SHUT DOWN

On May 4 the Standard Gaoline Company shut down its Santa Fe No. 3 plant, turning gas over to Santa Fe No. 6.

RELIANCE MFG. COMPANY IS HOST TO SO. COUNTIES MEN

W. M. Thompson, president of the Reliance Manufacturing Company of Pasadena, Calif., was host to a group of district managers and central office representatives of the Southern Counties Gas Company at a golf tourney held May 15 at Flintridge Country Club. Eighteen holes of golf over the excellent Flintridge course were followed by a luncheon that will long be remembered with pleasure by those present—after which a few of the more ambitious undertook more golf.

Representing the Reliance Manufacturing Company at Flintridge were W. M. Thompson, Arthur Thompson, and Walter Thrall. Those who sampled the Reliance hospitality included C. E. Rutledge, T. K. M. Smith, W. G. Rich and son, C. G. Spencer, O. R. C. Grow, Clyde H. Potter, A. S. Hamilton, Gus Hamilton, George H. Finley, and M. Clark —who, incidentally walked into the money by bringing in low score. It was impossible to learn whether or not winnings were split between Clark and W. G. Rich, though the latter "imported" the former from Whittier.

Southern Counties Gas Company district managers hold monthly golf sessions throughout most of the year, meeting on various courses in the company's territory, and have on other well-remembered occasions been guests of W. M. Thompson.

MARMARTH, N. D., MAY BE SERVED BY MINN. NORTHERN POWER CO.

Gas from wells in southeastern Montana may be brought to Marmarth, N. D., as well as to Miles City, to which Hope Engineering Company is now laying a line from the Cabin Creek fields. A branch will probably be run to Marmarth, the Minnesota Northern Power Company already having made a survey of gas service conditions in the community.

SAN DIEGO EARNINGS UP

San Diego Consolidated Gas and Electric Company has reported gross earnings for the year ended March 31, 1927, of $6,126,394 as compared with $5,341,105 for the year previous, with a gain in net revenue of $479,112 over 1925.

P. G. & E. IS AUTHORIZED TO SERVE GRIDLEY, CALIF.

Pacific Gas and Electric Company has been granted a certificate of public convenience and necessity by the California Railroad Commission to exercise a franchise for the operation of a gas distributing system in the city of Gridley, Butte County, Calif.

LACLEDE COMPANY HAS BIG PROGRAM AT ST. LOUIS

Officials of the Laclede Gas Light Company, St. Louis, Mo., announce that plant additions and extensions of its system will this year call for a budget of $1,600,000. The extensions will include 36 miles of mains and 89 miles of service, at an estimated cost of $1,060,000. An increasing demand for gas in househeating and industry is given as the explanation for the expansion program.

GARBER GAS & FUEL CO. GIVEN PRAGUE FRANCHISE

At a special election at Prague, Okla., a franchise was granted to the Garber Gas & Fuel Company to install a gas distribution system. Gas will be supplied by the Empire Companies from a 6-inch main from the Seminole field.

STUDY BAXTER BASIN GAS

Victor Cotner, chief geologist for the Columbian Carbon Company, New York, and Dr. Edwin Binney, from the Department of Geological Sciences of Yale University, are conducting a study of the Baxter Basin gas fields, in the Rock Springs, Wyoming district.

EMPLOYEES' SMOKER

Four hundred male members of the Los Angeles Gas and Electric Corporation's employees' association enjoyed a smoker at Seal Beach on Friday, May 13.

CATALOGUE ON COUPLING

A catalogue is just off the press for the Dayton Pipe Coupling Company, Dayton, Ohio, devoted to the company's line of couplings, sleeves, clamps, saddles and fittings.

OIL AND GAS OPERATIONS OF EMPIRE WILL BE SEPARATED

On May 10 there was announced a large refunding operation by Henry L. Doherty and company, through which all of the now outstanding bonds of the Empire Gas & Fuel company are to be refunded. Segregation of the oil and gas properties of the Empire Gas & Fuel company, chief subsidiary of the Cities Service company, will be effected.

Under the new plan the Empire Gas & Fuel company will be a holding company with three subsidiaries, Empire Oil & Refining company, Cities Service Gas company and Indian Territory Illuminating Oil company. A statement from Henry L. Doherty and company says that the Cities Service Gas company will acquire the entire gas pipeline system and substantially all of the other gas properties formerly owned by Empire Gas & Fuel company and subsidiaries, except Indian Territory Illuminating Oil company, and in addition, the properties of the Kansas-Oklahoma Gas company. These combined properties constitute one of the largest pipeline systems in the United States, consisting of 2,290 miles of pipelines and 13 compressor stations. Gas is sold to local companies serving over 135 cities and communities, including Kansas City and Joplin, Mo.; Bartlesville, Okla., and Kansas City, Leavenworth, Atchinson, Hutchinson, Topeka and Wichita, Kansas. Gas so handled averages more than 100,000,000 cubic feet daily.

LONE STAR ACQUIRES DALLAS AND COUNTY GAS COMPANIES

By purchase of the common stock of the Dallas Gas Company and the County Gas Company, which serve the city of Dallas, Texas, and vicinity, the Lone Star Gas Corportion has acquired control of these distributing companies. The Lone Star had previously sold gas wholesale to these companies, but had no financial interest in them.

The Lone Star is the largest natural gas transmission and distribution company in Texas, supplying Fort Worth, Dallas, and 79 other cities through a 1700-mile transmission system. Control of the two companies named above gives the Lone Star more than 110,000 domestic consumers.

ELECTRIC COMPANY TO APPLY 14 PER CENT REDUCTION

The Southern California Edison Company has announced a reduction of 14 per cent in its rates for lighting and general household use, effective July 1, bringing the rate to five and six-tenths cents per kilowatt hour in Southern California. In the San Joaquin Valley the rate to all agricultural and industrial users will be dropped from seven to six cents. The rate reduction is announced as an experiment, its effect to be carefully checked at the end of a year's trial.

CARANAHAN WITH CLOW

Glen C. Carnahan, manager of the house and water heating division of the Peoples Gas Light and Coke Company, Chicago, since 1921, has resigned to become general manager of the gas heating department of James B. Clow & Sons, Chicago. He takes the place of E. V. Dailey, who has retired.

SEMET-SOLVAY BUILDING WAUKESHA GAS MACHINE

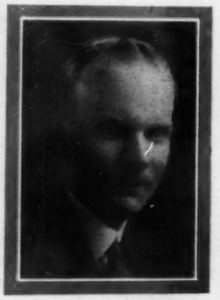
A six-foot water gas machine to take care of peak load demands for the Wisconsin Gas and Electric Co., at Waukesha, Wis., is being erected by the Semet-Solvay Engineering Corp. of New York. The engineering firm contracted to complete the set in fifty days.

STREET WIDENING MEANS WORK FOR PORTLAND GAS MEN

Active work on an extensive program of widening existing streets and cutting through new streets in order to facilitate handling of traffic by the Willamette River bridges is now under way in the city of Portland, Oregon. The work already authorized involves the expenditure of several million dollars, and surveys are now being made for additional work. The Portland Gas and Coke Company will have several crews engaged for the greater part of the summer on reconstruction of their underground structures as required by the street widening projects.

CHANGES IN OFFICERSHIP OF PACIFIC METER WORKS

Charles H. Dickey, manager of the Pacific Meter Works, having rounded out fifty years of service in the meter manufacturing business, has tendered his resignation to the board of directors of the American Meter Company and intends to take a well earned rest. At their April 20 meeting the American Meter Company directors accepted his resignation and appointed W. D. Dickey, assistant manager, as manager in his place. K. C. Tomlinson, formerly engineer, succeeded W. D. Dickey as assistant manager. Early in May W. D. Dickey left the Coast to attend a directors' meeting at the company's eastern headquarters.



W. D. Dickey

NEW CORROSION RESISTANT MATERIAL DEVELOPED

Pioneer Paper Company, Los Angeles, has developed a new corrosion resistant pipe covering, known as Rubbertex, a specially refined asphalt preparation which is heated and then applied.

Experiments have been carried out with the coating by the Southern Counties Gas Company, according to the manufacturers. One of the severest consisted of submerging a treated pipe for a long period in a strong saline solution with heavy charges of electricity passing through the pipe.

Unusual methods are being followed in merchandising the material. Several thousand "silent salesmen," have been assembled at the factory. These consist of 50-pound cans of the substance which are to be distributed at cost to public utilities, water companies, gas concerns, irrigationists and others maintaining underground lines, for use in demonstration under operating conditions.

DESCRIBE TRENCHER

The Cleveland Trencher Company, 20100 St. Clair Avenue, Cleveland, Ohio, has issued a late catalogue descriptive of its Baby Digger, a light weight, compact trencher which has been manufactured by the company since 1921.

HONOR 30-YEAR MEN

Twenty-four employees of the British Columbia Electric Railway Company, Vancouver and Victoria, B. C., have been presented with gold watches by George Kidd, president of the utility. The employees have been with the company 30 years or more.

"RADIANTFIRE" NEW COMPANY PUBLICATION

The General Gas Light Company has begun to issue an attractive monthly publication called "Radiantfire", after the firm's product, the Humphrey Radiantfire. Many useful ideas, including a number of sales features worked out by companies handling General Gas Light products, have been contained in the two issues thus far off the press.

F. H. BIVENS TO HONOLULU

Frank H. Bivens, general agent of the Southern Counties Gas Company, with Mrs. Bivens sailed from Los Angeles Harbor on the steamship City of Honolulu June 4 with the chamber of commerce excursion to Honolulu. Mr. and Mrs. Bivens will remain in the Islands longer than the excursion party, returning July 8 on the City of Los Angeles.

FLOODS TAKE TOLL OF PIPE LINES IN LOUISIANA

Two pipe lines of the Texas Company crossing the Red River at Ardis, Louisiana, have been washed out due to the swift current of the river during the flood conditions. The Magnolia Gas Company also lost three pipe lines crossing Red River north of Shreveport, and several lines of the Southwestern Gas & Electric Company were washed out and damaged during the high waters in Louisiana.

OFFICERS FOR 1927 NAMED BY B. C. ELECTRIC RY. ASSN.

J. J. Burton, 1926 president of the B. C. Electric Railway Company's employee association, was reelected at the association's 1927 election. E. H. Lytle is vice-president, W. S. Hudson secretary, and J. V. Armstrong treasurer.

DOHERTY MAN STARTS FIRM TO HANDLE SECURITIES

Percy H. Whiting, at one time manager of the customer ownership division of Henry L. Doherty & Company and later general retail sales manager for the same organization, has left the Doherty company to establish a general securities buiness under the name of P. H. Whiting & Co., Inc., with headquarters in New York City and a branch in Newark. With Mr. Whiting are associated a number of sales executives with past experience in utility sales promotion. Conducting employee campaigns for utilities will be a specialty with the new Whiting organization.

LOS ANGELES UTILITY MEN ON TRIP TO BOULDER DAM SITE

A group of utility men from Los Angeles made a trip to the proposed site of Boulder Dam during the last week of April. In the party were A. B. Macbeth, executive vice-president of the Southern California Gas Company, T. J. Reynolds, chief counsel for the same utility; F. S. Wade, vice-president and general manager of the Southern Counties Gas Company; LeRoy Edwards, counsel for Southern Counties Gas Company; Ben R. Meyer, president of the Union Bank and Trust Company and A. L. Lathrop, trust officer of the same institution.

IOWA COMPANIES MERGE

On May 1 the recently organized Iowa Public Service Company acquired the Central Iowa Power & Light Company and the Iowa Light, Heat & Power Company. The merged companies were under U. G. I. control, and the new company is U. G. I.-owned, its headquarters being at Fort Dodge, Ia. Four communities of Iowa are served with gas by the company.

CALIF-EASTERN TO BUILD GASOLINE PLANT

California Eastern Oil Company has taken out a $65,000 permit for an absorption plant to be constructed in the Alamitos Heights field, Southern California.

NATURAL GAS ASS'N APPROVES GASOLINE CODE

The Natural Gas Association of America at its annual meeting in Cincinnati last week approved what is known as Code No. 1 to be used as standard in measuring the gasoline content of gas. This code has been under discussion for the past two years by technical committees representing the gas association and the Association of Natural Gasoline Manufacturers.

NEW GASOLINE EXTRACTION METHOD TO BE TRIED

A new method of extracting gasoline from casinghead gas probably will be tried out in the Mid-Continent field, according to Dr. Emeric Kroch, assistant technical manager of the Societe Belge de Recuperation Industrielle. The method of extraction is called the Bregeat process and was developed during the World War when it was used extensively in the smokeless powder works of the Allies in France, England and Belgium.

NEW ABSORPTION PLANT FOR NATIONAL GAS PRODUCTS CORP.

National Gas Products Corporation of Shreveport, La., has recently completed the first unit of an absorption gasoline plant in the Pine Island district of the Caddo oil field. This unit, which has a capacity of 3,500 gallons daily, is the first of four units to be installed on the present site.

CARBON PLANT EXPLOSION

An explosion which occurred in May in the carbon black plant in the Lance Creek field, Wyoming, injured two employees and damaged the plant so that operation cannot be resumed for some time.

EFFICIENCY CLUB ENTERTAINS COMPANY MEMBERS

The Efficiency Club of the Southern Counties Gas Company in Orange County offered its hospitality to 400 Southern Counties employees at Laguna Beach, on May 18, all districts except Santa Barbara and Ventura counties being represented. Features of the evening were a "grunion hunt" and a weiner bake.

DALLART, OKLA., OFFERED GAS

A. D. Morton and associates have made proposals to Dallart, Okla., to supply that community with natural gas from holdings in Eastern Moore County.

FEDERAL GASOLINE CO.'S TEXAS PLANT NOW WORKING

Operation of the Federal Gasoline Company's new natural gasoline plant was begun in May. The plant is on the Westex lease in Section 13, block Y of the M. & C. survey, to the northeast of Borger, in the south Hutchinson county field of the Texas panhandle. With only part of the wells connected the new plant is extracting about 4,000 gallons of gasoline daily from the gas treated. The gasoline content of the gas averages about one gallon per thousand cubic feet. Production from nine wells will be handled by the plant, which production was formerly treated through a Phillips Petroleum Co. plant.

Rudy Copeland is president of the Federal Gasoline Company. Dorest Carter, Jr., is vice president and treasurer, and F. W. Verando, secretary.

A METALLIC lead seal in threads and joints made possible by Merco Pipe Joint Compound. Fine METALLIC LEAD in suspension in a vehicle forming a compound readily applied with a brush. Something different from the old graphite mixtures. Merco Pipe Joint Compound is insoluble in oils, gasoline or acid. Heat makes the joint tighter.

Packed in convenient sizes and manufactured ready for use. Send for sample.

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for inspection at Eastern foundries, mills and shops

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IT IS DIFFERENT
IT STARTS HOT

Here's
Hot Water
Quick and
Without Waste

The
New Way

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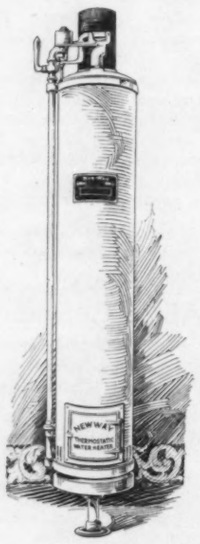
WATER HEATER



In the new way the pilot light is utilized to circulate warm water through the coils at all times—the heater starts hot—Saves gas, water and time.

It's Insulated

Made and Guaranteed by

New Way Manufacturing Company

894 FOLSOM STREET
SAN FRANCISCO

Gas Engines *and* Compressors

(Continued from Page 30)

the same cylinder size and R.P.M., but the actual ratio is usually from 1.6 to 1.8, owing to the losses in the two stroke cycle due to its method of operation. These include loss of fresh fuel with exhaust which materially reduces economy and loss of power in compression of the mixture in the crank case or compression chamber. In crank case compression engines, loss of fuel and compression frequently occurs due to leaks around the case covers. Two manufacturers of two-cycle engines are at present experimenting with timed injection of the fuel gas under pressure into the cylinder, instead of previously mixing it with the air. Development and practical application of this device will be watched with interest and should, if perfected, result in better fuel economy for the two-cycle engine. There will still remain, however, the unavoidable dilution of the incoming scavenging air with burnt gases which are not entirely exhausted. The use of separate blowing or scavenging air pumps has been found to be commercially impractical on small two-cycle engines and mechanically unsatisfactory on large units.

The two-cycle engine has the advantage of simplicity owing to the absence of valves. Recent refinements in the design of valve gear adopted by builders of four-cycle engines have done a great deal to simplify this part of the engine and to minimize the care and attention necessary to keep the engine operating satisfactorily. These include also the use of higher grade heat resisting alloy steels in valves. Without such steel the modern airplane motor, for example, would be impossible.

ADVANTAGES OF FOUR-CYCLE ENGINE

The four-cycle engine, though admittedly more complicated, is surer and more certain in its action. The idle stroke allows the cylinder a short time to cool between explosions and consequently the average operating temperature is lower and wear on rings and cylinders correspondingly less. A somewhat heavier flywheel is necessary, but this being a comparatively simple casting does not add materially to the cost. The tendency to vibration is greater, but this can be and is offset in modern well designed engines by the use of proper counterbalance weights, either in the crank fantail or flywheel, and it is difficult to observe any difference in this tendency to vibrate between a two and a four-cycle engine of the same size or horsepower, operating under the same conditions. The consumption of lubricating oil is also considerably lower with the four-cycle engine. In any engine, accessibility and the ease with which adjustments and repairs may be made is a factor which will always receive the attention of the practical operating man, and is one which deserves the consideration of the plant designer.

While there are still today a great many compressor plants operating using compressors driven by engines with a belt transmission, the trend of modern design is distinctly and logically away from this type of drive, except in special or unusual cases, and is in favor of the direct connection of the compressor piston rod to the reciprocating parts of the engine through distance or tie rods. The reasons are more or less obvious and include saving in initial cost of machinery, including the expensive belt, saving in floor space, building and foundation cost and the doing away with the costly upkeep of belts.

It is beyond the scope of this paper to attempt a thorough discussion of the thermodynamics of the internal combustion engine and compressors or a derivation of the basic formulae applying thereto, but the formulae are comparatively simple and their use amply substantiated by many careful laboratory tests, as well as innumerable checks under practical operating conditions.

In considering the gas engine, the terms indicated and brake horsepower are familiar to us all. The mechanical efficiency is known to be the ratio of the latter to the former, and ranges from zero at no load to its maximum at full load. This maximum has been determined to vary on an average from 80 to 90 per cent and even higher in the type of four-cycle engines under discussion. It is also referred to as the ratio between the thermal efficiency based on B.H.P. and the thermal efficiency based on I.H.P.

Since the horsepower of any engine is the foot pounds of work done per minute, divided by 33,000, it is necessary in determining this quantity to know the length of stroke of the power cylinder, its area, the number of power impulses or cycles per minute and the pressure which acts against the piston throughout the cycle, or in other words, the mean effective pressure. The expression for this horse-power per cylinder therefore becomes:

$$\text{I.H.P.} = \frac{\text{Plan}}{33{,}000}$$

where P the mean effective pressure is given in pounds per square inch, L is the stroke in feet, A the net piston area in quare inches, and N the number of power impulses per minute. In a single-acting four-cycle single cylinder engine, N would be equal to half the number of revolutions per minute; in a double-acting single cylinder, since there is a cycle for each revolution, N is equal to the R.P.M. Likewise N is equal to the R.P.M. in a two-cycle single acting power cylinder.

From the above definition, Brake Horsepower = Indicated Horsepower times mechanical efficiency (B.H.P. = I.H.P. x M.E.), or, in the case of the average four-cycle engine under discussion B.H.P. = I.H.P. x .85.

Sound and conservative engineering calls for the rating of large four-cycle gas engines on the basis of not to exceed 75 or 80 pounds M.E.P. at full load, with an average compression of the mixture before explosion of from 90 to 110 pounds. Piston speed of horizontal engines from 150 to 200 H.P. should not be greatly in excess of 650 feet per minute.

In automotive work the trend of design seems toward higher speeds and, with the use of specially shaped cylinder heads, higher mean effective pressures. This, of course, means greater horsepower with the same or even smaller power cylinder displacements. It should not be forgotten, however, that the service demanded of the automobile or airplane motor is quite different from that of the engine used in natural gas compression plants. In the former case the motor must have extreme flexibility and be able to develop power over a wide range. Its service is also intermittent. In most gas compressor plants the engine is called upon to deliver its rated power or possibly more, twenty-four hours a day and every day in the year, or as near this as possible. Frequently this operation is expected under very adverse conditions, such as improper cooling, lack of proper operating attention, etc. For these reasons an engine rated on the basis

of comparatively low speed and low pressures should be expected to give satisfactory and continuous operation through a much longer life. The judicious use of lubricating oils of the proper specifications and maintenance of proper engine temperatures by the circulation of sufficient good water are absolutely essential to good operation. The tendency to over-lubricate an engine, particularly the power cylinders is perhaps the cause of as much trouble as failure to provide sufficient lubrication. Since in so many field plants an adequate supply of pure soft water has been unobtainable a great deal of trouble has been experienced due to the deposit of thick scale on the walls of engine cylinder jackets and heads. Because of this, operators are being educated rapidly to appreciate the value of closed cooling systems circulating soft or condensed water or a mixture of both, through the engine jackets.

TAR REMOVAL EQUIPMENT ADDED TO PORTLAND HOLDER

Permanent equipment for removal of tar from the relief holder has been installed by the Portland Gas & Coke Company. This consists of a header provided with sight flow funnels surrounding the holder tank. Opposite each funnel a branch is connected to the bottom of the holder tank with provision for inserting a steam spray pipe through a stuffing box so that the tar in the holder can be heated up. The header drains into a sump tank and a pump is provided for pumping the tar into storage tank.

Having developed a profitable market for its dehydrated tar for road treatment, and with its production for 1927 practically sold out, the Portland Company is anxious to recover all the tar available.

WADE ENGINEERING BECOMES LINCOLN DISTRIBUTOR

Wade Engineering Company, 1855 Industrial Street, Los Angeles, has been appointed California distributor of Lincoln Electric Company products, made in Cleveland. Sale of "Linc-Weld" motors over the entire state of California and "Stable-Arc" welders in northern and central California will be handled by the Wade company, of which Henry N. Wade is president. Mr. Wade, who for the past three years has done engineering and consulting work in the natural gasoline and petroleum industry in Southern California, is an experienced electrical engineer and a graduate of Cornell University. For seven years he was in charge of alternating current development with the Cutler Hammer Manufacturing Company, and for two years was sales manager of the Keystone Iron Works, Los Angeles.

TRI-COUNTY GAS CO. LAYS NEW LINES IN SEMINOLE AREA

Several gas lines are being laid in the Seminole pool area of Oklahoma by the Tri-County Gas Company, a subsidiary of the Independent Oil & Gas Company. A 6-inch line is being extended to Maude, and another of the same size to Tecumsch, and another 6-inch line from Beardon in Okfuskee county to Yeager in Hughes county. The Tri-County Gas Company furnishes gas for Holdenville, Okemah, Wetumka, Seminole, Earlsboro, Maude and Tecumsch, delivering gas at the city gate to separate distributing companies.

ANOTHER PLANT FOR STANDARD

Standard Gasoline Company has placed its Huntington Beach No. 8 plant in operation, with G. S. Laros as supervisor. Mr. Laros is a graduate of the company's training squad plan.

"WIMMIN"

A Short Talk to Gas Company Executives

IT MAY be "old stuff" to say, "If you would open up new avenues for profitable gas sales, appeal to the women." But there is some "new stuff" in the latest booklet we have published, entitled "AT HOME WITH THE MOVIE STARS." Women are appealed to in this booklet very convincingly to pry open the purse of "Friend" Husband so you can sell more gas at a profit.

Gas gives woman more time for self advancement.

Get this booklet yourself, read it, pass it on to your wife, see if we are right when we say that if you will hook up your sales department with ours you can popularize the one form of general house heating which has every advantage and appeal.

That system is PAYNE-HEAT—gas fired warm air furnaces installed the Payne way. Tried and proven for the last 12 years in thousands of homes.

—So don't forget to write for "AT HOME WITH THE MOVIE STARS."

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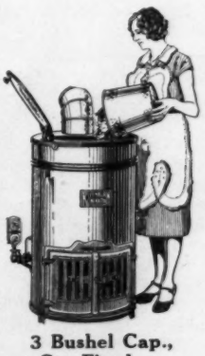
Branch: 478 Sutter St., San Francisco, Calif.



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for Homes—Stores—Schools—Hospitals

Retail Price $100.00 on Coast

Pacific Coast Representative **C. B. Babcock Co.** **135 Bluxome St. San Francisco**

The people want this modern gas appliance; it means greatest sanitation and convenience in their homes.

The Kleenburn low price opens up a wide market.
Write for Literature and Discount.

THE KLEENBURN COMPANY
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MAAS

Water Reagents

Are Scientifically Prepared After An Analysis of the Water To Remove Scale Forming Elements

Maas Water Reagents are not patented "cure-alls." All elements contributing to the forming of scale are studied and a reagent developed specially for the purpose, in the Maas Laboratories.

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SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
Chester, Pa.

NATURAL GAS GASOLINE OPERATIONS

Compiled by E. T. Knudsen

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE HUNDRED and forty-eight natural gas gasoline plants with a daily indicated capacity of 1,406,725 thousand cubic feet, report a recovery of 40,796,983 gallons of natural gas gasoline from 28,980,131 thousand cubic feet of gas treated in April. This is an increase of 646 barrels in daily average production.

Utilization of natural-gas gasoline amounted to 929,612 barrels, an increase over March of 53,882 barrels. Daily average utilization of 30,987 barrels was 1,392 barrels less than daily average production of 32,379 barrels.

Stocks of natural-gas gasoline at the end of April amounted to 609,422 barrels, of which 31,216 barrels were reported by natural-gas gasoline plant operators and 578,206 barrels by refinery operators. This is an increase of 41,745 barrels over March stocks. This stock figure of 609,422 barrels is approximately nineteen and one-half days' supply at the current rate of concumption.

Production of gasoline during the month of April amounted to 4,934,202 barrels, a daily average of 164,473 barrels. This is an increase of 206,852 barrels or 4.38 per cent over March output and an increase of 966,713 barrels or 24.37 per cent over the output of April, 1926.

Of the gasoline produced 13,927 barrels were reported as finished gasoline produced by natural-gas gasoline plant operators. Production of gasoline from Cracking Processes decreased in April to 303,039 barrels.

Stocks of gasoline show an increase of 92,183 barrels during April and at the end of the month amounted to 13,244,823 barrels. This stock figure includes 16 barrels of finished gasoline reported by natural-gas gasoline plant operators.

CALIFORNIA NATURAL-GAS GASOLINE PRODUCTION
DISTRIBUTION AND STOCKS
April, 1927

PRODUCTION *Type of Plant*	*Gas Treated M. C. F.*	*Natural-Gas Gasoline Produced Gallons*	*Gasoline Recovery Per MCF Gas Treated*
Oil Absorption	12,287,815	18,808,244	1.531 Gal.
Compressor	240,993	364,499	1.512 "
Combination Comp. and Oil Absorption	9,863,006	15,219,664	1.543 "
Combination Oil and Charcoal Absorption	5,284,918	6,334,298	1.199 "
Charcoal Absorption	1,303,399	53,401	.041 "
Drip	.....	16,877	..... "
TOTALS	28,980,131	40,796,983	1.408
Finished Gasoline produced at plants			13,927 Bbls.
DISTRIBUTION			
Stocks First of Month	.....	Bbls.	567,677 Bbls.
Production during month	.....	"	971,357 "
Quantity mixed with crude or unfinished oils		340,213 "	
Used in Blending at Refineries		358,156 "	
Stocks end of month		609,422 "	
Used at Plants, Shortage and Evaporation losses		16,743 "	
Balance		14,500 "	
TOTALS		1,539,034 Bbls.	1,539,034 Bbls.
STOCKS			
Natural-gas gasoline held by Natural-gas Gasoline Plant Operators		1,311,051 Gal. or	31,216 Bbls.
Natural-gas gasoline held by Refiners		24,284,652 " "	578,206 "
TOTALS		25,595,703 " "	609,422 "
Finished Gasoline (Motor Fuel) held by Natural-Gas Gasoline Plant Operators			16 Barrels

GASOLINE PLANT PLANNED FOR STANDARD ENGINEERING

Standard Engineering Company, with headquarters in Los Angeles, is planning the erection of a $40,000 gasoline absorption plant in the Alamitos Heights district.

ADD TO CAPACITY OF TALLANT, OKLA., GASOLINE PLANT

The Tallant, Okla., natural gasoline compression plant of the Empire Gas & Fuel Company has been improved in all departments, plant efficiency being increased and capacity for handling an increased amount of natural gas secured. The main building has been enlarged and additional auxiliary equipment installed to work in conjunction with the fifth compressor unit under construction at present. This latest unit is a 1000 horsepower double acting twin tandem Cooper compressor. All improvements and construction work are to be finished early in June.

WYOMING NATURAL GASOLINE GETS FAVORABLE RULING

The Geological Survey at Washington, D. C. has approved the recommendations of its Mineral Leasing Division extending the relief basis for the valuation of natural gas gasoline at one-fifth instead of one-third of the market value in the Salt Creek field, Wyoming. This relief was petitioned for by the Midwest, Carter and Ohio oil companies on the ground that it cost so much more to operate natural gasoline plants in the Rocky Mountain fields than in other sections of the United States.

INDIAN TER. ILL. OIL COMPANY BUILDING BOOSTER PLANT

The Indian Territory Illumination Oil Company is building a new booster station, located in Osage County, Oklahoma. The estimated cost of construction will be approximately $20,000, and the station will have a capacity of 30,000,000 cubic feet per day.

Gas Appliance Men Hold Menu Contest

(Continued from Page 31)

will be turned over to a Board of Judges who will pass upon and select the winners.

"The cash prizes offered by the State-wide organization are:

First Prize	$100.00
Second Prize	50.00
Third Prize	25.00
Fourth Prize	15.00
Fifth Prize	10.00

GENERAL INSTRUCTIONS

1. The menu complete, including the recipes used for the main dishes, should be submitted to one of your local gas appliance dealers or turned in at the local office of the Gas Company on or before Saturday, May 7th.

2. Name and address should be written on the menu sheet.

"Conditions and rules of this contest have been made very liberal to encourage the housewife to use her own initiative and resourcefulness in preparing and submitting her best complete dinner menu.

3. Prizes in local units will be awarded Monday, May 9th. Prize winning menus of the local units must be in the hands of the State Committee before Friday, May 13th. State prizes will be awarded Wednesday, May 18th.

4. Judges—It is essential that each Unit have at least three judges. It is suggested that where possible the head of the Domestic Science Department of your local High School be appointed chairman of the judging committee and that the other two members will be the leading club woman of the community and the home service representative of the local Gas Company."

THE WINNERS

The fortunate prize winners in this first menu contest conducted by the Gas Appliance Society were:

First Prize: $100, won by Mrs. Morris L. Boxell, Oleum, Calif. (East Bay Unit).

Second Prize: $50, won by Edythe M. Watts, 2317 30th Street, Sacramento, Calif. (Sacramento Unit).

Third Prize: $25, won by Mrs. Clifford Gorman, 112 Primrose Road, Burlingame, Calif. (San Francisco Unit).

Fourth Prize: $15, won by Alice Stevenson, 240 Stockton Street, San Francisco, Calif. (San Francisco Unit).

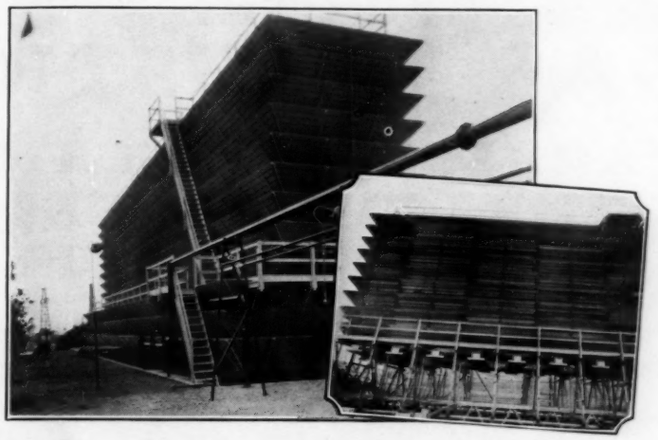
Fifth Prize: $10, won by Rita Bowers, 2621 Fulton Street, Berkeley, Calif. (East Bay Unit).

Local units where menu contests were held are capitalizing the results of their efforts in newspaper stories announcing the winning contestants and their prize menus.

While the formal report has not yet been compiled on other features of Gas Appliance Exhibit Week, it can be said that sales were very gratifying, and that the publicity attendant upon the campaign created a great deal of interest in gas appliances.

GAS IN THREE MONTHS FOR LOMPOC, CALIFORNIA

Santa Maria Gas Company anticipates getting natural gas to Lompoc, Calif. from the Santa Maria fields within three months, providing its application to serve that community is sanctioned by the state railroad commission. Eight-inch pipe would be laid to Lompoc from the fields, with emergency storage facilities in Lompoc, according to R. E. Easton, president of the company.



The New Fluor Cooling Tower for Open Type Coolers

First, the water is cooled in the most efficient type of cooling tower, after which it is collected into the longitudinal flume above the open coolers. Cold water is then distributed to the stands of the coolers in quantities desired. The water can be shut off from any stand of coolers at any time for inspection, cleaning or repairs. Coolers can be removed or replaced while the tower is in operation. The installation can be extended easily and conveniently.

Fluor Towers are manufactured of the finest redwood. Standard design permits immediate shipment.

AND—in spite of the highest quality and workmanship, our unequalled quantity production keeps our prices low—invariably below the cost of home-built towers of comparable materials and performance. Get our prices on your requirements.

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Constructors and Engineers
909 E. 59th St., Los Angeles, Calif.
Kennedy Bldg. Tulsa, Okla.

FLUOR REDWOOD COOLING TOWERS

PIPE

Montague-Wade Safety Water-Tube Boiler

Guaranteed more pounds pressure, horse-power for horse-power. Gets up full head of steam quicker—won't blow up—can be cleaned quickly—easily. 1 to 20 h. p. and larger. Full details and prices upon application.

Montague pipe and other steel products have stood the test of time. You'll find it a good investment to use them.

Riveted Steel Pipe
Well Casing
Concrete Forms
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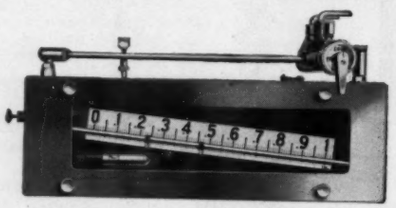


Lewis M. Ellison

quality dates back 30 years; there is really nothing more to say, except we are his Southern California representatives.

However it is well to add that we have a working model of the new Ellison Pointer Draft Gage. Like the Inclined Tube Gage, the new type speaks for itself. Inquiries are now in order.

The Ellison U-Path

Steam Calorimeter is also well worth investigating.

Remember, we have other good instruments and specialties.

JENSEN
INSTRUMENT CO.
443 S. San Pedro Street
Los Angeles

950 Parker Street
Berkeley, Calif.

Gas Department Bulletin

(Continued from Page 28)

meetings and inspections that are held under the direction of the safety engineer. In other words, in some industries the crying need for control over the attention given by the employee to his specific task is met in a variety of ways, whether it is directly under the control of one man, such as a personnel manager, or whether it is accomplished through meetings, inspections, or by the printed word.

RECOGNIZING THE PROBLEM

A discussion of these various methods of promoting safety and efficiency takes place sooner or later in a growing organization. About two years ago the Gas Department of the Pan American Petroleum Company arrived at the point where it recognized the need for such a control in order to reduce accidents and fires, and in order to promote a more satisfactory degree of operating efficiency. The representatives of the different divisions of the department were called into a meeting held in the main office, and the problem was thoroughly discussed in an attempt to find a satisfactory solution. Schemes in use by various other companies were brought forward and analyzed, and an attempt was made to combine the best practices of all other companies into a policy which would produce results in the Pan-American system. H. L. Eggleston, manager of the company's Gas Department, came to the conclusion that the printed word offered the most satisfactory solution of the problem, and worked out plans for issuing a monthly bulletin to go to Gas Department employees—its contents to be designed to thoroughly acquaint each employee of the department with details of his particular work, and also to stress the matter of safety and fire prevention. Through the Bulletin the individual employee could get the most advanced information available on the proper way to fight fire, and on the best way to take care of the injured. It was recognized that the matters of safety and fire prevention fall naturally into four divisions, namely:

(1) Accident prevention.
(2) Fire prevention.
(3) First aid.
(4) Ability and equipment to fight fire.

Of these four the first two were naturally considered of most importance, because, if accidents and fires are prevented, the need for first aid and fire fighting equipment is less urgent, although they must be at all times available and ready for use.

So it was believed that the safety engineer, who, normally, specializes primarily in first-aid, and in first-aid education, would be relieved of much arduous work if particular emphasis were first placed on accident prevention and fire prevention through the Gas Department Bulletin.

It was also felt that if such a bulletin were issued, and if proper stress were placed on the correct procedure in the conduct of all work, that operating efficiency, and many other problems relating to department operation, could be adequately taken care of. A monthly bulletin then, which would be issued by an editor thoroughly familiar with the work of the department, and under the direct supervision of the manager of the department, was believed to be the most satisfactory means of:

(1) Preventing accidents,
(2) Preventing fire,
(3) Providing education and first-aid,

(4) Providing education in methods of fire fighting,

(5) Elevating the morale of the entire organization,

(6) Increasing the operating efficiency of the organization,

(7) Lowering construction and operating costs, and finally,

(8) Stimulating the individual employee to direct his best thought and action on his particular task.

The Bulletin was first issued on January 4, 1926, and consisted of a mimeographed letter-size pamphlet of about ten pages; it contained on Page 1 a foreword clearly setting forth the object of the Bulletin, and describing the character of the articles that would appear in later issues. The first step in bringing before the employees of the department a more thorough knowledge of the work they were doing was covered in Bulletin No. 1 by two articles; one described the flow of natural gas from the field wells through the plant, and the other stressed the manner of operation and the hazards to be encountered in a compressor room. These articles were written by members of the department who were familiar with the work, and who were responsible for the results obtained.

QUESTION AND ANSWER DEPARTMENT

In the same issue another department was inaugurated which consisted of four specific questions concerning the articles printed in the Bulletin, or concerning the work the employees were required to take care of. The answering of these questions was not compulsory, but was encouraged, and the questions were so worded that it was practically necessary for a man to read each article in order to properly answer them.

With the Bulletin was furnished a "Request for Information" sheet with the information that any questions concerning any details of plant work about which the employee might be in doubt would be answered by the department.

The articles in the Bulletin were accompanied by blueprints showing in detail the construction of, for example, a gas scrubber and casinghead regulator, and picturing a flow sheet that would assist in establishing a clear mental picture of the process involved.

The first issue of the Bulletin was followed at monthly intervals by others; the interest taken in answering the questions and studying the articles grew month by month, and the results that were obtained in the field work of the department became more and more pronounced as the work progressed.

This Bulletin has throughout been issued without cost to the employee. At the end of each year the men receiving the Bulletin are offered the privilege of turning in their copies, and these copies are bound into book form at a nominal cost of about fifty cents each paid by the employee, which is the only expense that the employee is required to bear. The bound copies of the Bulletin equip Pan American Gas Department workers with exact and detailed information on the conduct of their own work, available for reference at any time—and also they provide a practical education in other phases of the Gas Department's operation.

A general idea of the character of the Bulletin may be gained by studying the reprints of typical pages, shown with this article. In Figure 1 is shown a specimen title page taken from Bulletin No. 8. In

KEY *Special* PIPE JOINT COMPOUND

Water-Proof

KEY SPECIAL PIPE JOINT COMPOUND will effectively seal screw thread and gasket joints for such service as Gas, Water, Steam, Compressed Air, etc.

One of the many advantages this compound has over the commonly used red leads and oils, etc., is that the pigment will not settle to the bottom of the container, thereby holding the contents in equal suspension at all times ready for service.

KEY SPECIAL PIPE COMPOUND is not a quick hardening cement but a plastic lubricant and filler that will seal the most obstinate joint with ease.

You may test the high quality of this product by taking a small quantity between the fingers which will immediately demonstrate the wonderful lubricating qualities along with the "pull or drag" that makes possible a permanent seal without resorting to cementing materials, most of which are very undesirable and impracticable to use.

Write for FREE Sample

E. A. Key Co., Inc.
1431 Santa Fe Ave.
Los Angeles, Calif.
Portland Seattle
San Francisco
Denver El Paso

FIRE BRICK

OUR Fire Brick service is founded on 39 years experience in Clay Products.

Standard sizes for

LININGS — CHECKERS
BOILER SETTINGS

are always kept in stock. Deliveries are prompt. Our plant is especially well equipped for making special shapes according to your specifications. Fire Clay, Hollow Tile, all clay products required can be supplied by us.

Phone or write us your requirements.

LOS ANGELES
PRESSED BRICK CO
GLADDING, McBEAN & CO
621 So Hope St Trinity 5761
LOS ANGELES

283

A Severe Test for Any Tank Paint

The photograph above shows tanks of a prominent company of California painted two years ago with one coat of ECLIPSE Tank Paint White, over one coat of ECLIPSE Metal Primer Gray—and still giving perfect protection today. The snowy whiteness of ECLIPSE Tank Paint White is not affected by the hot sun, moisture and air, even over a period of years.

This actual test in the field, together with many others, has established the durability and pleasing appearance of ECLIPSE Tank Paints. You have the assurance of long tank life at an economical cost. You can easily reduce your evaporation losses to a minimum by using ECLIPSE Tank Paint White.

Write for our catalog today: ECLIPSE Paints, Enamels, Varnishes and Specialties for Oil, Gas, Electric Light and Power Companies.

The Eclipse Paint & Mfg. Co.
Cleveland, Ohio, U.S.A.

Dallas Tulsa Philadelphia
San Francisco Denver Newark
Pittsburgh Charlotte, N. C.
Springfield, Mass.

ECLIPSE Tank Paint

Figure 2 is shown a specimen question page taken from Bulletin No. 6. The articles published during 1926 are listed in the "Table of Contents" for the bound volume, in Figure 3. Most of these articles were written by employees of the department, some by foremen, and others by men in the department who were qualified to write articles along any certain line. Every detail of plant work is carefully described; every man is cautioned as to the creation of fire hazards and as to safe practices. Specific problems are dealt with, and most advanced methods of safety and fire prevention, first-aid, and methods of fire fighting are described in detail. In addition, whenever suitable articles are published in any of the leading journals, reprints of these articles are secured and are inserted in the Bulletins so that the employees are given not only the views of others in their own company, but also have available information prepared from a different viewpoint.

The Pan American Bulletin, as published, is an outstanding example of a specific method of educating employees in the best way to perform their work. It has much to commend it to the attention of those faced with similar problems, being direct, inexpensive, and flexible enough to be adapted to any situation which involves employee education.

Today, after the scheme has been in operation for over a year and a half, there is still a sustained interest in the articles published; in the questions that are asked; and there is a quite noticeable *esprit de corps* that was almost entirely lacking before the first Bulletin was published. The effect of the Bulletin was immediately apparent to department executives in a spontaneous improvement in the operation of the Gas Department, in the results that were accomplished by the operatives of the department, and in an improved fire and accident record.

SYSTEM OF GRADING

The Bulletins are looked forward to and studied month by month, and the suggestions that are received for articles that would be beneficial reveal a desire on the part of the employees to be helpful to one another, and to share their knowledge with one another. In answering the questions that are asked there is a decided element of competition, due, no doubt, to the system of grading that has been adopted. The answers of each man are graded, and a record is kept of these grades; each man is notified of his grade every month and of his grade-standing in the plant where he is located; also of his grade-standing in the department. There is constantly an incentive to further study and to a higher quality of work because the employee knows that his work is under close observation, as is also his general knowledge of plant operations.

Those in charge of the contents of the Bulletin have consistently limited the material published to information of direct application to Gas Department problems. Many attempts to use company house organs or bulletins as a means of improving employee efficiency have failed in the past, think Pan American executives, because in seeking to secure the workers' interest they have introduced irrelevant material. The Pan American Bulletin avoids this pitfall. To quote Mr. Eggleston, manager of the company's Gas Department, "We feel that it is highly undesirable to give the social, comic, or athletic appeals a place in the Bulletin, because they would draw interest away from the main task in hand—to improve department efficiency."

As a result of their experiences with the Bulletin, Pan American Gas Department heads have gained a healthy respect for the power of the printed word in industry. Lectures may be quickly forgotten, they say, but a bulletin incorporating the same information will remain as a permanent record.

The test of any policy directed at employees is the reaction of the employees themselves. The following comment received recently at Gas Department headquarters came from an employee who has been following the Bulletin for some time, and indicates that Pan American employees recognize the real service the publication is rendering:

"Men who are not interested in their work are apt to be careless and thoughtless in the execution of their tasks. Men who do not fully understand their duties are sure to make dangerous mistakes. When a man thoroughly understands the work he is doing; thoroughly appreciates the hazards involved; and when he has a definite interest in the work he is doing, he will accomplish a much more satisfactory result."

A bulletin such as the one described in this article must, of course, defeat the element of secrecy which was once so pronounced in many organizations. A great many employees of large companies are never encouraged nor permitted to learn much about the general aspect of the work the company is doing, nor are they encouraged to study details of the work with which they are not specifically concerned. These restrictions cut down the employee's interest in his work, stifle his initiative, and in the end, hamper the operating efficiency of the organization of which he is a part.

CAMPBELL PLANT COMPLETED FOR CIENAGA CORP.

J. A. Campbell Company of Long Beach, California has just completed what is said to be the largest high-pressure absorption plant in the world. The plant was constructed at Saticoy, Calif. for the Cienaga Corporation and will be put in operation before the middle of June. It is a complete Campbell plant including seven (4x28) Campbell Oil Froth absorbers; two (4x8) scrubbers and an 8-pass six-inch multitubular interchanger. All of the equipment was designed for a 400 lb. pressure.

CITIES SERVICE EARNINGS SHOW NEW HIGH MARK

The Cities Service company enjoyed in 1926 the most successful year in its history, according to the seventeenth annual report recently mailed by the company to its stockholders. Consolidated gross earnings of the company and its subsidiaries were $140,309,834, a new high mark. Total assets of the Cities Service organization increased to $663,128,487. Other new high records were established, among them the sale of more than 73,000,000,000 cubic feet of natural and manufactured gas. Security holders of the organization increased during the year to more than 300,000.

BRAUN PORTABLE PLANT AT ALAMITOS FOR PET. SECURITIES

Petroleum Securities Company has erected a Braun portable absorption plant on its Bryant lease in the Alamitos Heights field, Southern California. The plant is handling flush production, making 3,000 to 4,000 gallons on 2,000,000 cubic feet of gas daily. This flush production may possibly be taken care of later by a permanent plant now building for the company.

Capacity, Efficiency *of* Warm Air Furnaces

(Continued from Page 29)

14. Total heat liberated per hour (B.t.u.)....
15. Temp. of air entering furnace (Deg. F.)
16. Temp. of air at No. 1 Thermometer (Deg. F.).....
17. Temp. of air at No. 2 Thermometer (Deg. F.).....
18. Temp. of air at No. 3 Thermometer (Deg. F.).....
19. Temp. of air at No. 4 Thermometer (Deg. F.).....
20. Average temperature= $\frac{(T\text{-}1 + \frac{1}{2}(T\text{-}2 + T\text{-}3) + T\text{-}4}{3}$ (Deg. F.)..
21. Temperature rise (Deg. F.).....
22. Temperature of stack gases (Deg. F.)....
23. Cubic feet cold air entering the furnace .....
24. Weight of cold air entering furnace (lbs.) .....
25. Heat delivered at outlet (B.t.u.).....
26. Per cent efficiency.....

In regulating the volume of air through the meter to duplicate the temperature conditions secured with natural circulation, it is sufficiently accurate if the temperatures are within a few degrees of each other. Within narrow limits in rate of heat input the efficiency of a furnace is practically the same and it does not introduce an appreciable error to consider the product—volume of air delivered times temperature rise—a constant. If the temperature rise with the blower is higher than secured with normal operation, the volume must be less. The volume of air measured is therefore increased or decreased, depending upon whether the temperatures secured with the blower are higher or lower than with normal circulation.

In almost every furnace with three or more heat pipes there are one or two pipes so located as to give air at higher temperature than the other pipes. In the test procedure here discussed it is essential that the pipes be so dampered that the air flowing through each of them is practically at the same temperature, otherwise it is difficult to arrive at the true weighted average temperature for all the air. Unfortunately, if some of the pipes are dampered, there will be some restriction in the circulation through the furnace, the air will be at a higher temperature, the stack temperature will be higher and there will be some slight loss in efficiency. However, the condition will represent nearly practical conditions and no great error will be introduced. Where a considerable amount of testing is done and accurate comparative results are desirable, some simple means undoubtedly could be devised to give even distribution of heat through each of the heat pipes, without any interferance with the natural circulation through the furnace.

When a Thomas electric meter or some other standard metering apparatus is not available, a calibrated Pitot Tube is quite satisfactory and inexpensive. For the smaller furnaces the velocity of air in a four-inch pipe will give sufficient differential pressure for accurate readings for a Pitot Tube. For larger furnaces a six-inch pipe is necessary.

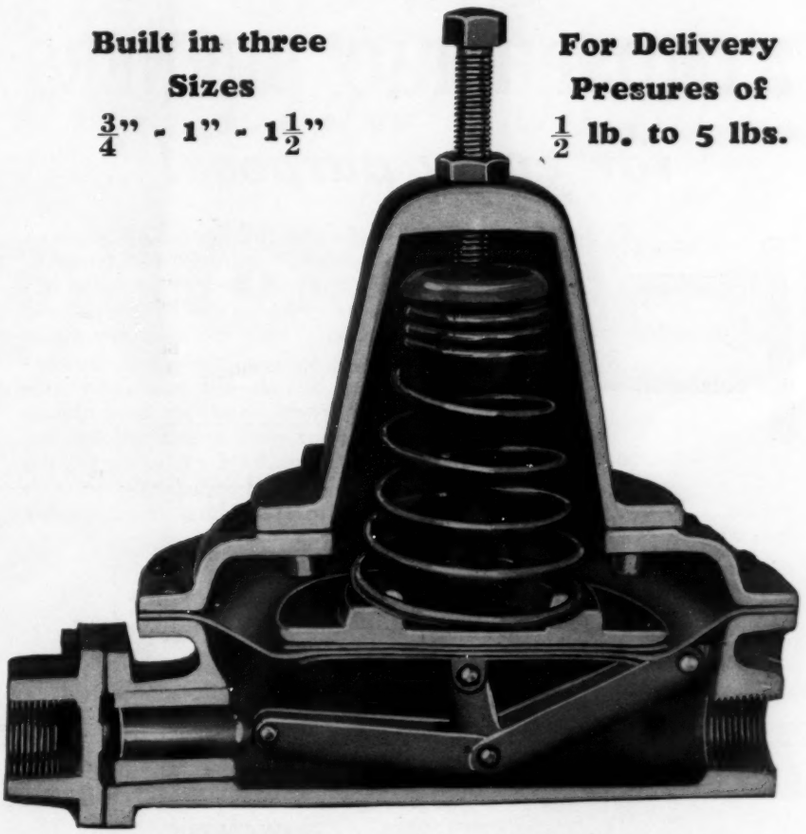
HAVRE RAILROAD SHOPS USE NATURAL GAS

The shops of the Great Northern railway at Havre, Montana, are now using natural gas from the Bowes structure, supplied by the Montana Gas Corporation.

The Reliance High Pressure Regulator

Built in three Sizes
$\frac{3}{4}$" - 1" - 1$\frac{1}{2}$"

For Delivery Presures of
$\frac{1}{2}$ lb. to 5 lbs.



Particularly suitable for Industrial Plants where positive lockup, close regulation and large capacities are desired. Prices upon application

Reliance Manufacturing Co.

PASADENA, CALIFORNIA

Eastern Representative
Isbell Porter Co.
Newark, N. J.

Northwestern Representative
Northwest Gas & Electric Equipment Co.
Portland, Oregon

Mid-Continent Representative
Westcott & Greis
Tulsa, Okla., Dallas, Texas

W P & S

DESIGNERS, FABRICATORS & ERECTORS OF PRODUCTS OF STEEL

Investigate WESTERN Hi-Pressure Unit Gas Holders

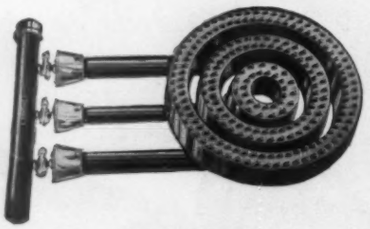
WESTERN PIPE & STEEL COMPANY
5717 Santa Fe Ave. LOS ANGELES
OF CALIFORNIA
FACTORIES
LOS ANGELES · SOUTH SAN FRANCISCO · FRESNO · PHOENIX · TAFT ·
444 Market Street SAN FRANCISCO

W P & S

JOHNSON

ATMOSPHERIC BURNERS

for every purpose!

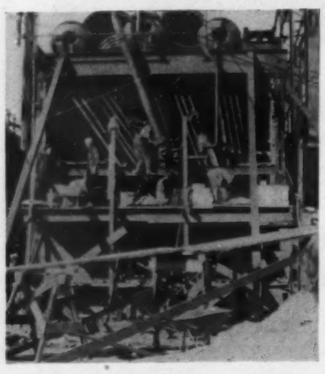


No. 60 B C E

We make a full line of all types of atmospheric burners — Bunsen, Ring and Drilled Pipe with Improved Johnson Mixers and Valves. These burners are made for the various standard requirements, but should you need special burners made in accordance with your own specifications, we are prepared to serve you promptly and efficiently in this regard. Write for full details of our standard items. Inquiries for special burner requirements are also invited.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative—C. B. Babcock Co.
135 Bluxome Streeet San Francisco, California



Brick work in progress—boiler installation L. A. Gas and Electric Co.

Any Place In The West

Established 1906

J. T. Thorpe & Son

Inc.

Fire Brick Contractors Specializing in

Gas generator, boiler, still and furnace brick, industrial furnaces, retorts, kilns, brick smokestacks.

Portland 632 Ry. Exch. Bldg.
Los Angeles 321 W. 3d St.
San Francisco 417 Market St.
Seattle 939 Stewart Bldg.

The Beacon Automatic Storage Water Heater

TEN SIZES FROM 12 GALS. TO 120 GALS.
FOUR MODELS FROM $57.50 UP

The Beacon is staunchly constructed and heavily insulated.. Seams are both riveted and welded.
Brass pipe is used in delivering hot water from the heating element (which is also brass) to the boiler. Brass keeps water clean.
Let us send you full particulars.

Beacon Water Heater Co.

Geo. F. Pearse
776 So. San Pedro St. Los Angeles, California

A New Note *in* Good-Will Advertising

(Continued from Page 25)

400 participants. Cash prizes were offered for a name, and while no one sent in the exact head chosen, several suggested the word progress, and one suggested "community service," so a combination was effected.

LOCAL ITEMS DRAW INTEREST

Now, when a man builds a new building in Fort Smith the improvement gets mention in the gas company's "newspaper"—with congratulations offered to the new proprietor—special congratulations if the building is gas-fired. When an event of importance to the community is being planned the gas company, through its tabloid, boosts for it. All of the items which are given mention are related to some line of the company's activities (gas, electric, and street railway)—either directly or by implication. But the moral is never flaunted in the face of the readers, for a consistently light and humorous touch is given the copy. This is the work of J. A. Federhen, assistant to the general manager, in charge of public relations; he is the "J. A. F." who initials each piece of copy.

The company feels that several definite ends are being served by its tabloid. Invariably the mention given individuals in "Community Progress" makes friends — for the individuals are always consulted before an item about them appears. This presents an opportunity for personal contact, and the publicity given local enterprises reacts to the company's good.

In addition, the company has established a regular avenue through which its problems may be discussed when necessary. It may even be viewed as a medium of defense; for in the event that articles elsewhere in the paper present unfavorable or incomplete information on something which affects the utility, the public will naturally turn to the tabloid to get the company angle on the question. The company recognizes the danger in saying too much, and its tabloid messages are written only after careful consideration of all the factors involved.

A valuable feature of the idea is that it is capable of unlimited expansion. For instance, when Van Buren, a neighboring community of 6,000 population, in which the company had interests, was promoting a strawberry festival, the Fort Smith Light and Traction Company began to issue its bulletin there, with localized copy to help promote the festival. This aroused so much favorable comment that the tabloid was continued in that community also. Thought is being given to extending it in other sections.

NOW THEY READ IT

Advertising is written to be read, and because the company now has definite proof in the many written and verbal comments being received on the tabloid that it is getting deserved interest, it is felt that advertising dollars are being well spent. There is no longer room for the idea that space is bought in newspapers only because it is politic to buy it.

And lastly, "J. A. F." writes us that through frequent mention of appliances, the company has appealed to the "wife" in a new way, presenting a sales argument from a different angle than that of more usual display advertising.

In a letter written to *Western Gas* some little while ago Mr. Federhen concludes: "Community Progress is a year old this month, has cut its first tooth, and we hope will be a healthy child. Attending physicians vouch for the strength of its lungs."

Public Relations *in* Small Gas Companies

(Continued from Page 24)

concrete evidence of that faith by the courageous investment of sufficient capital to effect the greatest possible operating economies. At the same time, they must give such satisfactory service as would win the public support and acceptance of rates adequate to pay a fair return on the capital so invested. A start was made during 1922 and 1923, when complete new gas generating equipment and adequate holder capacity were installed at Monterey, with the result that by the end of 1923, the company's investment in gas plant equipment had increased from the $263,726 shown by the balance sheet at the end of 1920 to $424,682 and the net earnings had increased to $14,-065 or a return of 3 1-3 per cent on the increased fixed capital, exclusive however, of working cash, materials and supplies, etc. This was not a very great gain in net earnings but it was something, and during the same period the attitude of the California Railroad Commission was materially altered so that when on November 18, 1922 the Commission again issued a decision after reviewing the gas rates of the Company, it allowed an increase in rates which, based upon its estimate of operating expenses, gross revenues and rate base, was calculated to give the Company a full 8 per cent return on its investment.

At the end of 1923, the Byllesby Engineering & Management Corporation assumed control of the Company and its affairs. The Byllesby policy was expressed by the late Colonel H. M. Byllesby in the following instructions to his managers:

> "Deal honestly, fairly and lawfully with all concerned.
>
> "Make your business and conduct above reproach.
>
> "Your business will be most profitable if you charge the *lowest possible rates and develop the largest volume of business.*
>
> "Try to set a high business standard; keep the cards on the table. We want no secret deals, no favoritism, no corruption. *Sooner or later the people will understand.*"

Under this charactertistic Byllesby policy, the Coast Valleys Company continued to pour money into gas plant facilities, calculated first to improve service and also to increase efficiencies with the result that at the end of 1926, the investment in fixed capital in the gas department was $718,682, an increase of 70 per cent in the three-year period under Byllesby management and the net earnings for the year 1926 were $66,078, or approximately 8 per cent on its rate base in the gas department, when working cash, materials and supplies, etc., are taken into consideration

The company now has new and modern equipment in both of its gas generating plants, its distribution system is adequate to give uniform pressure to its customers, its purification equipment is sufficient to send out clean gas, its public relations are in very satisfactory shape and no serious rate complaints are in evidence.

With this experience as a background, I again reiterate that the greatest need of the gas business and the surest way for any company, large or small, to solve its public relations problems is for everyone connected with the business including the owners, the management, the operating organi-

Stockton
Fire Brick Company

FIRE BRICK, INSULATING BRICK
HIGH TEMPERATURE CEMENT

High Grade Refractories
for

GENERATOR LININGS

CHECKERS

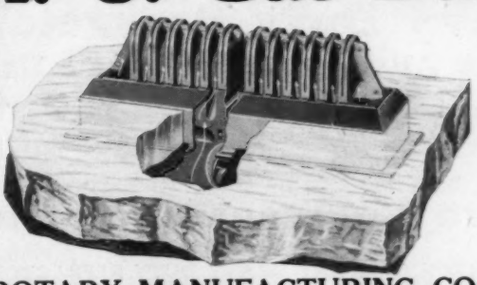
BOILER SETTINGS

OFFICE:
Rialto Building
San Francisco

WORKS:
Stockton
California

R. M. C. Gas Burner

Secondary Air Properly Introduced



Insures High Furnace Temperatures

ROTARY MANUFACTURING CO.
5720 Long Beach Avenue **Los Angeles, California**

Stauffer's

FERROX

Purifier

meets these essential requirements of a good

Gas Purifier

A highly active Iron precipitate, with a high Iron content. A thoroughly impregnated and porous bulky mass, ready to use, no mixing, no delay, always uniform.

A dependable source of supply

Pioneer manufacturers of Industrial Chemicals on the Pacific Coast

Stauffer Chemical Company

624-638 California Street, San Francisco, California

Chas. C. Moore & Co. Engineers, Inc.

CONTRACTORS FOR COMPLETE PLANTS

High Grade Machinery

The Babcock & Wilcox water tube boilers
Corliss high speed and poppet valve engines
Babcock & Wilcox superheaters
Hamilton compressors
Green fuel economizers
Wheeler Condenser & Engineering Co. condensing machinery
Cochrane feed water heaters (open and closed)
Cochrane feed water metering heaters
Cochrane feed water softeners (hot and cold processes)
Cochrane steam and oil separators
Cochrane flow meters
Moore automatic fuel oil regulators
Diamond soot blowers
Lagonda tube cleaners
Copes feed water regulators
Lagonda automatic boiler stop valves
Leslie reducing valves

And All Power Plant Auxiliaries

Address our nearest office for catalogs and complete information

Home Office: San FRANCISCO, Sheldon Bldg.

New York City, Hudson Terminal Bldg.
Los Angeles, Central Bldg. Portland, Gasco Bldg. Seattle, L. C. Smith Bldg.
Salt Lake City, Kearns Bldg. Honolulu, T. H. Phoenix, Heard Bldg.
Vancouver, B. C., Standard Bank Bldg.

ALUNDUM—CRYSTOLON

Heavy Duty Refractories

For All High Temperature Uses

Complete Stock of 9-inch Standard Bricks, Tile and Cements Carried

Phone TUcker 3452

Abrasive Engineering Corporation

Refractory Division

NORTON COMPANY HEAVY DUTY REFRACTORIES

617 E. Third Street **Los Angeles, Calif.**

zation and the regulatory commissions, to have faith in the business and to provide adequate funds both for new capital and rate of return. Then public satisfaction will follow, as the night the day.

There are of course many details which require attention in matters of policy affecting public relations after the house has been put in order and adequate service facilities provided. One of the most important traits of character in a public service company, just as in that of an individual is plain old fashioned honesty and sincerity.

For instance, we have often been told that the responsible representatives of a public utility company will accomplish much in the way of creating good public relations by becoming active members of local churches, lodges, service clubs, chambers of commerce and other civic organizations. This is undoubtedly true, provided such membership and activity is entered into by our representatives in a spirit of sincerity. I mean by this, that if a public utility man following this policy takes out membership in the chamber of commerce, for instance, pays his dues and then confines his activity in the chamber entirely to furthering his own selfish ends, pulling wires and doing politics for the direct benefit of himself and his company, he will in the long run do more harm than good;—but if he sincerely enters into the activitieis of the chamber of commerce for the universal benefit and upbuilding of the community, and if he sacrifices himself and his time in support of the general activities of the community, even if at times such general activities seems to be in direct opposition to the immediate interests of himself and his company, he will soon be recognized as a sincere, honest, active and reliable citizen and the public will unconsciously begin to appreciate the fact that the character of a utility is directly reflected in the character of its representatives and in the long run the utility will thus win the confidence of the public which it serves. Its public relations problems will then take care of themselves.

COOPERATION WITH THE PRESS

Another great agency which can properly be used by a utility to foster good public relations is cooperation with the press. Here against sincerity and frankness is bound to win and I think in this field the small company has the advantage over the larger company, because in the smaller communities a closer personal relationship can be built up between the company management and the editorial staff of the country newspaper. News is more scarce in the country than it is in the large centers of population and the local newspaper editor is usually in a very receptive mood for news of any kind about the public utility company. This, however, may act as a two-edged sword. If the relations of the company with the press and the public are not right, this "news hunger" may result in detrimental publicity about the company.

I have found in my experience with the newspaper men of our communities that they are glad to get facts and to publish facts. If we have any trouble I go frankly to them with it—just the same as I do when we have done something of which we are proud and which we would like to tell the world. I explain to them the causes of the trouble, give them the true facts, and try to meet the situation squarely. Invariably they are glad to put it before the public in its true light, rather than in the form of acrimonious criticism.

Incidentally, "it pays to advertise." Ad-

vertising is the life's blood upon which a newspaper depends and too often public utilities have adopted the policy of advertising in the newspapers as a sort of "legitimate blackmail" to prevent the papers from attacking the utility. This may in some cases temporarily serve the purpose. But here again in the long run, I am thoroughly convinced sincerity and plain dealing will pay. Advertising has a real value in itself for a public utility, just the same as it has for any other commercial enterprise. It pays to buy space to let the public know what your problems are, what your policies are, and what you are doing to meet your problems. Incidentally, in the gas business we have no monopoly. We are in competition with wood, coal and oil and other forms of fuel, as well as with electricity. An aggressive advertising campaign will pay for itself in building load and increasing the gross revenues of the company.

Hence I say, advertise for the good that you can get out of advertising and do not attempt to use your advertising as a club to force unwarranted publicity, which is not real news. This attitude will be appreciated by the average newspaper men and when you have news that *is* news, you will have no difficulty in getting it published.

Other details which I might mention but which time will not permit are familiar to all, such as the careful selection of the personnel, who meet the public; the importance of contact between the rank and file representing the company and its customers; the maintenance of clean, dignified offices and the great benefits to be derived from customer ownership of the securities of public utility companies.

In closing I want to say a word about the relations of the gas companies with the regulatory commission, under whose jurisdiction they operate. What I have said heretofore about the California Commission was not intended as a criticism of that Commission, which, on the whole, has been very courageous in meeting the situations with which it has been confronted. I believe it has honestly and successfully endeavored to deal with the public utilities under its jurisdiction in a manner calculated to give the public the lowest possible rates, commensurate with good service, and at the same time give the utilities sufficient return to enable them to induce new capital to invest in their properties, to the end that the entire State may be rapidly and substantially developed. This, after all, is the prime consideration to which every regulatory commission should look.

This being the case, it is very unwise for a utility to hide behind the state commission. I mean by that, that when a case comes up in which it is impossible to give a customer what he wants on account of some general rule that is neither accepted or promulgated by the utility commmission, it is unwise to tell such a customer that you would like to do for him what he wants, but the commission will not let you. All rules are made with a fundamental reason behind them. It is much better in such cases to be sure that you understand the situation and then to explain to the customer the fundamental reasons why such a rule is necessary and tell him that it is a rule of your company, which has the approval of the commission because it is right, and therefore you are sorry but you cannot give him what he wants.

I fear that in this paper I have not been able to offer anything very new to the gas industry in regard to the all-important problem of public relations. How-

Making ASSETS out of LIABILITIES

Some pipe lines are assets! Most of them are liabilities that keep eating into profits in maintenance bills.

It's just as easy to make assets of them though; all you need do is coat them with "Pioneer Rubbertex" and wrap them with "Pioneer Pipe Covering."

Then you have the perfect impervious coating that will not chip or scale; that will resist acid and alkaline erosion.... that protects them from galvanic action...and, biggest item of all, protects you from maintenance and repair expense!

A post card will bring you all the details.

PIONEER PAPER COMPANY, *Inc.*
Established 1888
55th and Alameda Streets
LOS ANGELES, CALIF.
Phone DELWARE 2111
San Francisco Seattle Portland
Spokane Denver

C. B. Babcock Company

"We Serve"

135 Bluxome Street, San Francisco, California

Stop the dollars from rolling down the gas line!

WITHOUT thorough absorption at the gasoline plant the outgoing gas will carry away part of the profits which rightfully belong to the plant.

Campbell Oil-Froth Absorbers by reason of their scientific construction reclaim a higher percentage of the gasoline content than any apparatus on the market.

J. A. Campbell

Consulting—Designing—Constructing

P. O. Box 669 Natural Gas Engineer Long Beach, Calif.

CAMPBELL OIL FROTH absorber

The STRICKLER Ratchet Pipe Cutter

The STRICKLER Ratchet Pipe Cutter automatically cuts cast iron, steel and wrought iron pipe (from 1½ to 30" in diameter) by hand (either in the trench or in the shop).

You can cut any pipe from any position easily. Simply pump the handle and the STRICKLER does the rest. Order your STRICKLER Now

W. W. STRICKLER & BROS.

1475 Oak Street Columbus, Ohio

ever, if in my discussion I have been able to stimulate thought by the re-statement and reiteration of certain well known facts and well known principles which will serve to re-direct attention to the subject and bring out helpful discussion from others, I am content.

Gas *in* Ceramic Industry

(Continued from Page 27)

pressure at the burner. When using gas, a pressure of from 12 to 18 pounds per square inch is necessary. The reason for this is that the burning is done entirely by a blasting method, so that the heat may penetrate throughout the kiln and all the brick obtain a uniform burn. Owing to the large area and density, considerable force is required to attain the desired shrinkage in the center of the kiln as well as at the quarters. This is somewhat difficult, as there is no natural draft to aid in the distribution of heat.

Some manufacturers desire a variation in colors. This is accomplished by closing up all the arches at the burner. The air mixers are then closed and raw gas is allowed to penetrate the ware for a few minutes at a time until the desired color is obtained. This knowledge can only be attained by experience. This process is highly satisfactory and is done at the completion of vitrification. A variety of colors, ranging from light salmon to the deep blues and purples have been obtained by this method of procedure.

From five to seven cu. ft. of natural gas, having a heating value of approximately 1100 B.t.u. per cu. ft., are required to burn one brick to a temperature of 2000 deg. F. This, of course, depends upon the dryness and composition of the material. The entire period required for burning ranges from six to eight days.

ROPER DOES IT DIFFERENTLY IN ADVERTISING

Something decidedly different in the advertising line is being done for its dealers by the George D. Roper Corporation, Rockford, Ill., maker of the Roper line of gas ranges and furnaces. On the theory that we are a nation of headline readers, the advertising department of the company got out a series of ten newspaper advertisements which startle the reader into attention through such captions as "Has Your Gas Oven Got Halitosis?" and "Would You Show Your Guest a Tin Bath Tub?" Mats of the series have been in great demand from Roper dealers, and sales have showed stimulus which is traced in good part to these "full of punch" ads. Another series, prepared as a follow-up to the first, is directed at the renter of apartments and also at the owner of apartment houses.

GAS FOR PORTLAND MODEL HOME

The Oregonian Model Home, being erected at Edgemont Terraces by Hiller Bros. for the Oregonian Publishing Company, will be equipped with the latest and most improved type of modern household appliances, including a GASCO warm air furnace.

OKMULGEE LOSES INJUNCTION SUIT AGAINST GAS COMPANY

The city of Okmulgee, Okla., on April 25 lost its suit for an injunction against the Okmulgee Gas Company, now the Oklahoma Natural Gas Corporation, to restrain that firm from using city streets, alleys or parkways for its pipelines under authority of a revocable permit.

Classified Advertising

Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge.

HELP WANTED

Gas company requires practical man for plant superintendent. Address Box A-8, care of *Western Gas.*

A large Gas Company, operating in a large Western City, desires to secure the services of an experienced Industrial Fuel Engineer. He must have the knowledge to sell gas for industrial purposes in competition with other fuels and make tests, reports, and installations. In replying, please furnish in first letter, experience, age, education, references and salary expected. Address Box A-10, care of *Western Gas.*

Situations Wanted

Note: *Western Gas* will publish free of charge, under this heading, advertisements of situations wanted. Maximum length, 50 words; additional space at classified rates five cents per word per insertion. Copy should be neatly typewritten on one side of paper only, and should be mailed to reach *Western Gas* not later than the 20th day of the month prior to publication date.

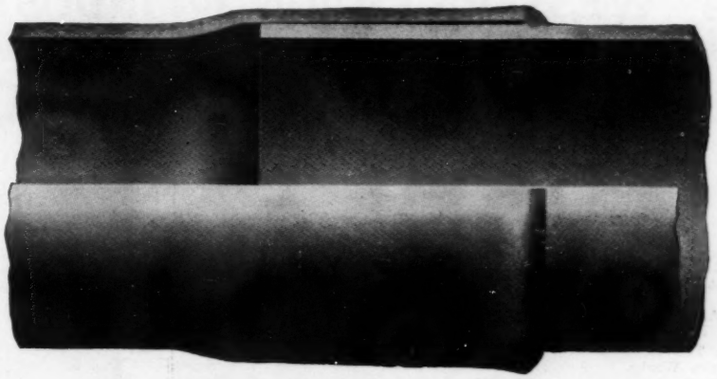
Natural Gas Man—Can install and operate gas plant, repair and test meters and gas wells. Has own bookkeeper; also assistant gas man who knows the business. Best of references. What have you to offer? Address Box A-6, care of *Western Gas.*

Gas man of 20 years experience with coal, water and oil gas, in both East and West. Has been superintendent of both operation and distribution for a number of years. Best of references. Address Box A-7, care of *Western Gas.*

Accountant and auditor—now employed, desires change. Is capable of taking complete charge of an office, installing modern accounting system and handling any other work in the various departments of a distributing company. Thirty-eight years of age, married and can give best of references. Address Box A-9, care of *Western Gas.*

OKLAHOMA GOVERNOR LAUNCHES GAS EXPORT INVESTIGATION

Governor Johnston of Oklahoma has initiated an investigation into the situation surrounding transmission of gas out of Oklahoma. A bill which would have permitted all companies to engage in piping gas across the state line was recently vetoed by the governor. Figures for gas transmitted out of Oklahoma in 1926 are given at 44,628,658,000 cubic feet, as compared with approximately 46,000,000,000 cubic feet sold by distributing companies in Oklahoma. The purpose of the present investigation is said to be to determine whether gas is being taken out of the state in violation of existing statutes.



STRENGTH RESISTANCE
ASTCO
DURABILITY

American Seamless Line Pipe
Quickest-Easiest-Cheapest To Lay

LONG LENGTHS, and the Astco slip joint for quick and easy welding, reducing time and labor costs on the job, make American Seamless Steel Line Pipe the quickest, easiest and cheapest to lay. Its economy lies not alone, however, in laying.

On popular sizes, American seamless has proved to be 33 per cent cheaper in handling, hauling and stringing on account of its light weight, long lengths and still maintaining a very high test pressure.

Its strength for high pressures, its resistance to corrosion and its ability to withstand adverse soil and climatic conditions, provides an endurance and long life which renders it the most economical line pipe under all conditions of oil country service. Its use eliminates leakage. Its high elasticity offers maximum resistance to shifting formations and cave-ins.

Pierced from solid billets of Siemens-Martin steel of high tensile strength, it possesses many times the strength and endurance of lapweld pipe. Provided in all diameters and lengths averaging 40 ft.

Write for literature, Prices and Specifications.

American Seamless Tube Corporation of California

Petroleum Securities Building, Los Angeles, California

535—5th Ave., New York City

1211 Neils Esperson Bldg. Houston, Texas

WESTERN GAS
626 South Spring Street,
Los Angeles, California .....192.....

Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of invoice, remittance will be sent to cover (1 year $2.00) or (3 years $5.00).

Name ..... *Title* .....

Company .....

Address .....

City and State .....

Please Check

[ ] GAS COMPANY [ ] GAS APPLIANCES
[ ] NATURAL GASOLINE CO. [ ] MISCELLANEOUS

Subscription: 1 Year, $2.00; 3 Years, $5.00, in Advance

A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
C. F. Braun & Co.
Chaplin-Fulton Mfg. Co.
Fluor Construction Co.
J. A. Campbell.
Jensen Instrument Co.
Southwestern Engineering Corp.
The E. A. Key Company
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
S. Herbert Lanyon
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Abrasives
Abrasive Engineering Corp'n.

Acetylene, Dissolved
Commercial Acetylene Co.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
Hill, Hubbell & Co.
The Paraffine Co.s, Inc.

Analyzers
C. F Braun & Co.
A. R. Maas, Laboratories.
Smith-Emery Co.

Annealers (Bar, Blank, Strip)
Pacific Meter Works.

Anti-Fluctuators
Pacific Meter Works.

Apparatus, Experimental Gas
The Alpha-Lux Co., Inc.
Pacific Meter Works.

Appraisals and Valuations
Smith-Emery Co.

Automobile Tires
Truck Tire Service Co.

Bags, Gas Main
C. B. Babcock Co.
Connelly Iron Sponge & Governor Co.
Mueller Co.
Safety Gas Main Stopper Co.
Semet-Solvey Engr. Corpn.

Barometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Bench Iron Work
General Gas Light Co.

Blast Gates
Montague Pipe & Steel Co.
Semet-Solvay Engr. Corpn.

Blocks and Tiles, Fire Clay
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.
S. Herbert Lanyon.

Blowers and Boosters
Ingersoll-Rand Co.

Blowpipes
Montague Pipe & Steel Co.

Boiler—Brickwork
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Boiler Equipment
E. A. Key Co.

Boiler Maker's Tools
E. A. Key Co.

Boilers, Gas-Fired
C. B. Babcock Co.
Baker Iron Works.
Montague Pipe & Steel Co.

Boiler Settings, Pipe and Boiler Insulation
S. Herbert Lanyon.
Pioneer Paper Company.
J. T. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.

Boilers, Water Tube
Baker Iron Works.
Montague Pipe & Steel Co.
Southwestern Engineering Corp.
Western Pipe & Steel Co.

Boxes
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Brass (rods, sheets, tubes, wire)
Mueller Co.

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
Western Pipe & Steel Co.

Brick, Firebrick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
S. Herbert Lanyon.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Brick, Firebrick—Installation
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Brushes, Wire Pneumatic
Abrasive Engineering Corp'n.
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
Western Pipe & Steel Co.

Burners, High Pressure
S. Herbert Lanyon.
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
C. B. Babcock Co.
General Gas Light Co.
Johnson Gas Appliance Co.
S. Herbert Lanyon.
Lee B. Mettler.
Payne Furnace & Supply Co.
Rotary Manufacturing Co.
Standard Gas Equipment Corp.

Burners—Oil
Rotary Manufacturing Co.

By-product Recovery Apparatus
Oliver Continuous Filter Co.
Semet-Solvay Engr. Corpn.

Calorimeter Accessories
Pacific Meter Works.

Calorimeters
The Alpha-Lux Co., Inc.
Pacific Meter Works.

Cases, Meter
Pacific Meter Works.
Pittsburgh Meter Co.

Casinghead, Gas Meters
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Meter Co.
The Foxboro Co., Inc.

Casing and Tubing (steel)
Montague Pipe & Steel Co.
Semet-Solvay Engr. Corpn.
South Chester Tube Co.

Casing—Iron
South Chester Tube Company

Cast Iron Pipe
Semet-Solvey Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Castings
Philadelphia Steel & Iron Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Cement
Abrasive Engineering Corp'n.
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Cement—Plastic
Pioneer Paper Company.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
Semet-Solvay Engr. Corpn.

Checker Brick
Abrasive Engineering Corp'n.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
The Alpha-Lux Co., Inc.
Pacific Meter Works.
Westcott & Greis, Inc.

Chemists, Analytical
A. R. Maas, Laboratories.
Smith-Emery Co.

Chimneys, Radial Brick
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Chimneys, Radial Brick Installation
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Chutes (coal, coke, ash)
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
C. B. Babcock Co.
Pacific Meter Works.

Coal Gas Plants
Semet-Solvay Engr. Corpn.

Coal Tar Products and Chemicals
A. R. Maas, Laboratories.
The Paraffine Co.s, Inc.

Cocks
C. B. Babcock Co.
Johnson Gas Appliance Co.
Lattimer-Stevens Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Coils and Bends
Philadelphia Steel & Iron Co.

Collectors, Dust
Western Pipe & Steel Co.
Semet-Solvay Engr. Corpn.

Compressors, Air
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Oliver Continuous Filter Co.
Robertson & Company.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.
Robertson & Company.

Condensers
Baker Iron Works.
C. F. Braun & Co.
Ingersoll-Rand Co.
S. Herbert Lanyon.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.

Condenser Boxes
Baker Iron Works.

Condenser Tubes
Semet-Solvay Engr. Corpn.

Controllers
Jensen Instrument Co.
The Foxboro Co., Inc.

Controlling Devices, Electric
L. R. Teeple Co.

Controls, Air and Steam
Jensen Instrument Co.
S. Herbert Lanyon.
C. F. Braun & Co.
The Foxboro Co., Inc.
S. Herbert Lanyon.
Steere Engineering Co.
L. R. Teeple Co.

Cooling Systems
S. Herbert Lanyon.
Semet-Solvay Engr. Corpn.

Cooling Towers
C. F. Braun & Co.
Fluor Construction Co.
J. B. Gill Corporation.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.

Counters, Revolution
Jensen Instrument Co.

Couplings
Pittsburgh Meter Co.

Coverings (Tank, Boiler, Cold and Steam Pipe)
The Paraffine Co.s, Inc.
Pioneer Paper Company.

Cubic Foot Bottle
Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.
Robertson & Company.

Cutters, Pavement
Ingersoll-Rand Co.

Cylinders, Compressor
The C. & G. Cooper Co.
Semet-Solvay Engr. Corpn.

Dephlegmaters
C. F. Braun & Co.
Southwestern Engineering Corp.
Semet-Solvey Engr. Corpn.
Western Pipe & Steel Co.

Diaphragms, Meter
Chaplin-Fulton Mfg. Co.
Pacific Meter Works.
Pittsburgh Meter Co.

Diggers, Clay
Ingersoll-Rand Co.
Robertson & Company.

Discharging Machines (retort, etc.)
Semet-Solvay Engr. Corpn.

Displacement System, Tar
Semet-Solvay Engr. Corpn.

Ditcher
Robertson & Company.

Door, Clean-out
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Drills
Ingersoll-Rand Co.
Mueller Co.

Drill Pipe—Iron
South Chester Tube Company

Drill Pipe—Steel
South Chester Tube Company

Dryers
Payne Furnace & Supply Co.

Elevators
Baker Iron Works.

Engineers and Engineering Service
J. B. Gill Corporation.
A. R. Maas, Laboratories.
Smith-Emery Co.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Engines, Diesel
The C. & G. Cooper Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Steam
Ingersoll-Rand Co.

Evaporating Apparatus
C. F. Braun & Co.
United States Cast Iron Pipe and Foundry Co.
S. Herbert Lanyon.
Southwestern Engineering Corp.

Excavators, Ditch and Trench
Robertson & Company.

Exchangers, Heat
Baker Iron Works.
C. F. Braun & Co.
S. Herbert Lanyon.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Exhausters
Ingersoll-Rand Co.
S. Herbert Lanyon.
United States Cast Iron Pipe and Foundry Co.

Experimental Apparatus
S. Herbert Lanyon.
Pacific Meter Works.

Extractors
Semet-Solvay Engr. Corpn.

Extinguishers, Fire
American La France Fire Engine Co.

Faucets, Drain
Mueller Co.

Felt—Deadening
Pioneer Paper Company.

Filters
S. Herbert Lanyon.
Oliver Continuous Filter Co.
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
The Alpha-Lux Co., Inc.
American Refractories Co.
S. Herbert Lanyon.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Fire Brick Contractors
J. T. Thorpe & Son, Inc.
Stockton Fire Brick Co.

First Aid Equipment
American La France Fire Engine Co.

Fittings
Hoffman Supply Co.
Philadelphia Steel & Iron Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Fixtures, Lighting (Domes, Portables, etc.)
C. B. Babcock Co.
Welsbach Company.

Flashlights and Batteries
The Paraffine Co.s, Inc.

Feed Water Heaters
C. F. Braun & Co.
S. Herbert Lanyon.
Southwestern Engineering Corp.

Fire Brick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
S. Herbert Lanyon.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
Semet-Solvay Engr. Corpn.

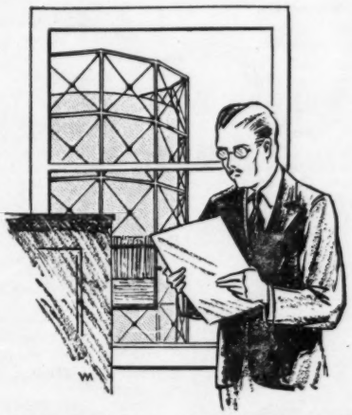
Flanges
Hoffman Supply Co.
Montague Pipe & Steel Co.
Philadelphia Steel & Iron Co.
Pittsburgh Meter Co.
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.
S. Herbert Lanyon.

Floodlights

Flooring—Industrial
Pioneer Paper Company.

Forged Steel Pipe Flanges
Philadelphia Steel & Iron Co.

Forgings
Baker Iron Works.
Philadelphia Steel & Iron Co.
S. Herbert Lanyon.
Payne Furnace & Supply Co.
Potter Radiator Corporation.
Pacific Gas Heating Co.
Geo. D. Roper Corporation.
J. T. Thorpe & Son, Inc.



INDUSTRIAL BULLETIN SERIES *for* ENGINEERS

Sent on request to those interested. (No. 8 deals with Special Paints for Gas Plants).

GAS HOLDER PAINTS

Study and experience have produced special Fuller products for all Holder surfaces — lower lifts, upper lifts and shell.

For the new-type Holder without water-seal, the major problems to be solved are metal-protection and weather and fume-resistance. Gas Holder paints are supplied in red, metallic, dark and light gray, olive green and other colors.

Ful-Lumina

The gas-proof, heat and light-reflecting aluminum paint — "coat-of-mail" protection for crowns of water-seal Holders and inside of Waterless holders. Also ideal for iron roofs and other metal surfaces, exterior or interior.

High-Heat Ful-Lumina

Withstands extremely high temperatures on generators, stacks, etc.

Technical Service

You are invited to present your special paint problems to our Technical Service Department. Upon request, this Department will survey your painting needs, make common-sense recommendations applying to your conditions. No charge—no obligation.

W. P. FULLER & CO.
301 Mission Street San Francisco

Branches in 27 Pacific Coast Cities . . Factories in San Francisco . . . Los Angeles . . . Portland

Distributors of Valspar on the Pacific Coast

FULLER
INDUSTRIAL Since 49 **PAINT PRODUCTS**

F-9

Recognized

as the Standard Control for Gas Lift Process

"The Foxboro Gas Volume Controller provides a convenient and reliable means for delivering a constant volume of gas to each individual well," writes Lester C. Uren, Professor of Petroleum Engineering, University of California, in a current issue of NATIONAL PETROLEUM NEWS.

Hand Control has proved inadequate.
The Foxboro Automatic Volume Controller is recognized as the one sure and economical way of controlling Lift Efficiency. This instrument:—
Properly proportions the volume of gas or air to the wells;
Permits the manifolding of gas compressors into a single large header.
Saves the services of men who otherwise would put all their time on this job;
Gives an infallible daily record of control of gas going to the wells.

The volume of orders already booked indicates that the Foxboro Automatic Volume Controller has the unqualified backing of the industry and that it has already been accepted as the standard instrument for controlling this revolutionary process.

THE FOXBORO CO., *Inc.*
Neponset Avenue, Foxboro, Mass., U. S. A.

WESTERN OFFICES
Los Angeles, 443 San Pedro St. San Francisco, 461 Market St.
Portland, Ore., 816 Lewis Bldg.

New York Chicago Philadelphia Pittsburgh Detroit
Rochester Boston Atlanta Tulsa Cleveland

FOXBORO
REG. U. S. PAT. OFF.
THE COMPASS OF INDUSTRY

Furnaces, Floor
Electrogas Furnace Co.
Payne Furnace & Supply Co.
Pacific Gas Heating Co.
Potter Radiator Corporation.

Furnaces, Lead Melting
C. B. Babcock Co.
Johnson Gas Appliance Co.
Mueller Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Gas Analysis Apparatus
Jensen Instrument Co.
Pacific Meter Works.
The Foxboro Co., Inc.

Gas Masks
Safety Gas Main Stopper Co.

Gas Main Tapping & Drilling Machines
Mueller Co.

Gaskets
Pittsburgh Meter Co.
Safety Gas Main Stopper Co.
Semet-Solvay Engr. Corpn.
The E. A. Key Company

Gasket Compound
E. A. Key Co.

Gasometer
Pacific Meter Works.
Semet-Solvay Engr. Corpn.

Gas Pipe Line Construction
Robertson & Company.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Gauges
The Alpha-Lux Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Meter Co.
The Foxboro Co., Inc.
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.

Gauges, Steam
Jensen Instrument Co.
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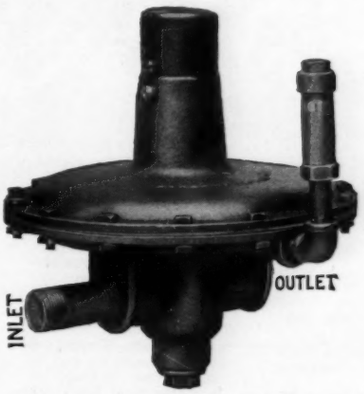

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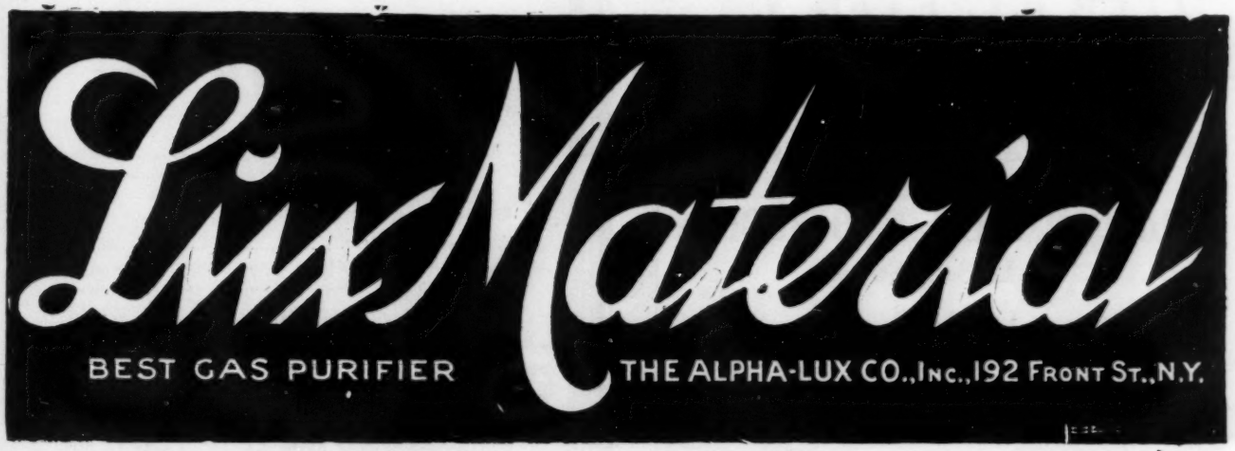
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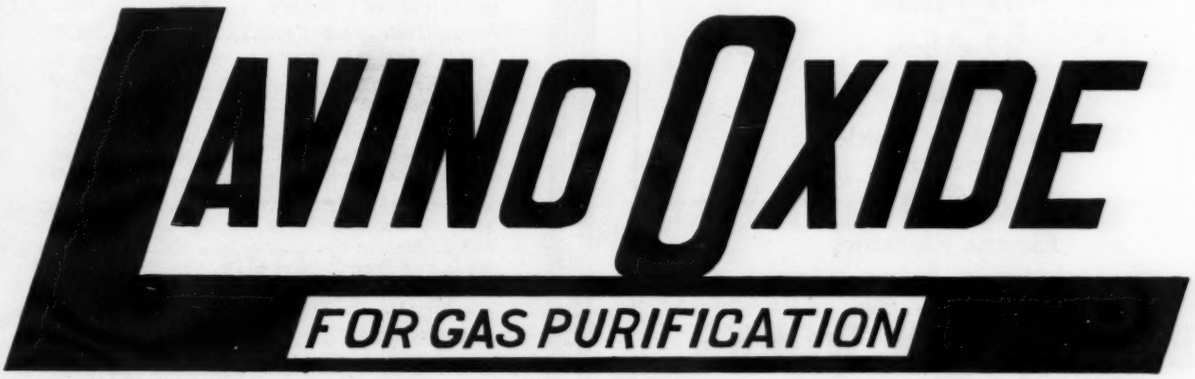
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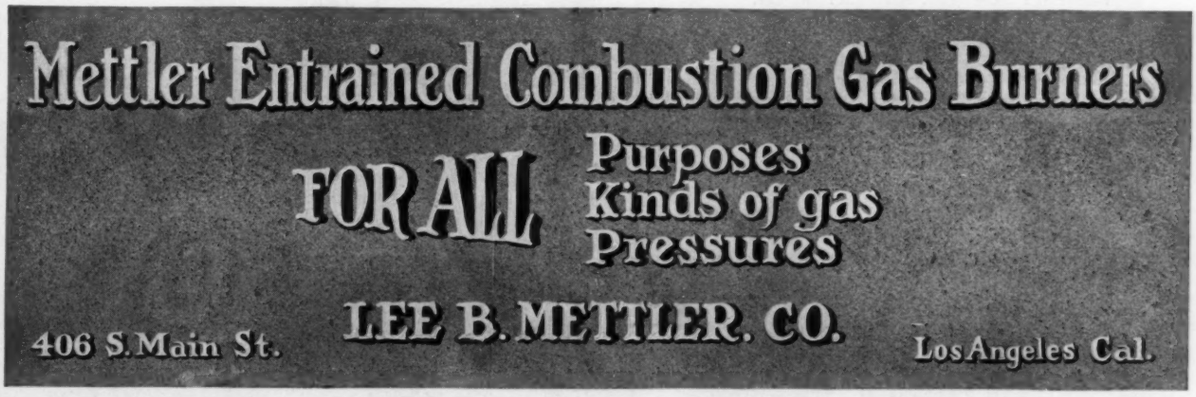
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Pronounced "World's Cleanest Gas Range" and first prize winner at California Maid Exposition. Has American Gas Association approval. Made in the world's most modern stove plant, specializing in white enameled ranges. Sheet steel, cast iron and channel iron construction, with interlocking joints, assure strength with enough "give" under strain to save the enamel—a service-cutting feature

"Pre-selling" accounts for White Star's volume sales

This is the first range to be scientifically built to meet today's merchandising needs. Behind it is the same sales urge that built the furniture and automobile industries—the tremendous sales urge of VISIBLE improvements, attractive lines and captivating appearance.

The instant your prospect glimpses this range, she knows she wants it—she is pre-sold on it! Then, say dealers, White Star's surprisingly low price quickly closes the sale.

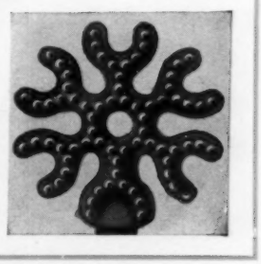
Hear the same convincing facts that started these dealers to White Star profits! Let us explain White Star to you! Write now!

THE DETROIT VAPOR STOVE COMPANY
Detroit, Michigan

Pacific Coast Representatives
A. C. Merz, 1925 8th Ave., Los Angeles
J. W. Simpson, 2903 Forest Ave., Berkeley, Calif.

White Star
GAS RANGES

Women know at a glance that five minutes with a damp cloth cleans this range; its corners are rounded, its surface is glassy—it has no angular crevices to catch dirt; even the grate cannot conceal dirt. Examine this burner pit; it exemplifies this new conception of gas range design.
If desired will furnish this range with a utility drawer beneath the cooking burners.



The new Even-Heet White Star Burner is designed on a pattern of interlocking circles, always assuring even heat distribution to every section of the cooking utensil.

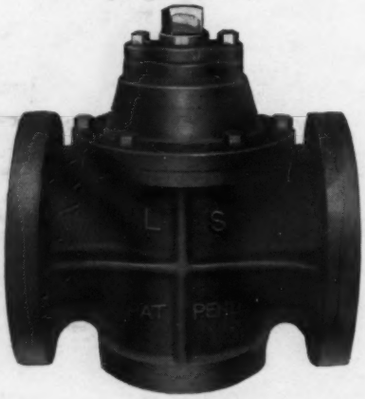
L-S

Adjustable Plug Valves

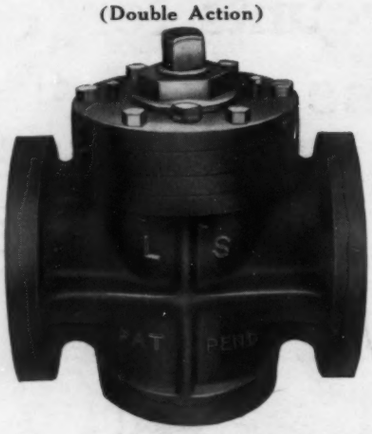
Assure

Easy Operation

(Single Action)



(Double Action)



THE principles involved in both the single action and double action Lattimer-Stevens plug valves assure easy operation in service under all conditions.

The single action plug valve in one operation breaks the seal by a slight mechanical lift, turns the plug and reseats it.

The adjusting nut on top of the double action plug valve breaks the seal of the plug and body allowing the plug to turn easily.

Both the double and single action plug valves can be furnished in all sizes from 1¼ in. to 6 in. Prices and additional information on request.

THE LATTIMER-STEVENS COMPANY

72 Yale Ave., Columbus, Ohio

New England Representative
The Eastern Service Co.
Boston, Mass.

San Francisco Representative
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67 Second St.

Chicago Representatives
The Utilities Service Co.
122 S. Michigan Ave.

Lattimer Stevens

METER CONNECTIONS-SHELVES
STOP COCKS ~ ~ ~ AND SEALS